# The Builder.

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Old Well at Villeneuve-les-Avignon ..... Drawn by Mr. J. Percy Wadham.
Entrance Hall, "Elveden" ..... Mr. Clyde Young, A.R.I.B.A., Architect.
House on the Hadley Road (Garden Front) ..... Mr. A. H. Hart, A.R.I.B.A., Architect.
Sketch for House, Isle of Wight ..... Mr. Geo. Scorer, A.R.I.B.A., Architect.
House, 37, Cheyne Walk, Chelsea ..... Mr. C. R. Ashbee, Architect.


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## *How to Judge Architecture.*

TO undertake to show how to judge of architecture is a rather serious programme even for a book, still more for a short article, though it can hardly be said that the undertaking is superfluous, either as regards the public or the profession. The public, we know, with a very few occasional exceptions among people who have given more than usual attention to art, are without any principle or standard whatever in regard to their likings and dislikings in architecture, which seem to be ruled mostly by the consideration whether a building is like what they are accustomed to. If it is, it strikes them as all right; if it is not, they do not know what to think, but in general conclude that it must be wrong. Architects can give reasons, to themselves and others, for their judgments; but we do not know whether it can be maintained that they always do so. They also, in this country at least, are rather too much dominated by fixed preferences for a special style or a special school of treatment. If a design illustrates their favourite method it has their sympathy; if not, it is dismissed as not worth consideration. There is a want of critical detachment in such an attitude. One may honestly think, for instance, that classic orders are out of date, and that one prefers a more free and picturesque treatment. But this conviction ought to be quite compatible with a perception that a building in a style we do not sympathise with may nevertheless represent a good and complete architectural conception of its kind, in which plan and design form a satisfactory whole. A building may be judged to be good or to be bad from its designer's point of view; but we must recognise the point of view, even if it is not our own. Otherwise, what should be judgment is apt to degenerate into prejudice.

As we have said, the heading is a rather large one for an article; but it is not our own, it is borrowed from a book,* in which an eminent American architectural critic offers to give the general reader such instruction as may put him in a position to form his own judgment on architectural design. A book might very well be written on such a plan; but in the present case we do not think the title exactly expresses the real scope of the book, which is, in fact, a broad sketch, in ten chapters, of the history and development of one style from another—from Greek architecture down to modern times. Egyptian architecture is omitted from the scheme, and not without reason, since it can hardly be said to have influenced the subsequent development of architecture. Everything begins from Greek architecture. Critical remarks arise here and there out of the conduct of the subject, but not in accordance with any obvious or pervading line of argument. Mr. Sturgis may reply that to give people a general idea of the historical development of architecture is to give them the best basis for forming a judgment on it; and much is to be said for that view. But it pre-supposes that readers will bring more thought of their own to bear upon the subject than is generally to be expected from those who read a book for information on a difficult subject that is new to them. It may also be urged that "How to Judge Architecture" is an excellent publishing title; for which still more may be said. Who would not read a short book which promises to make him a judge of a great subject?

Apart from any question of the significance of the title, the book is a good one, which architects may read with interest and the laity with profit; and it occasionally suggests considerations which, if not absolutely new, are well worth emphasising.

Mr. Sturgis takes Greek architecture for his point of departure on the ground that "it is well to take for our first study some buildings of that class about which there is the smallest difference among modern lovers of art," while he points out that this perfection of the Greek temple of the best period is to some extent due to the extreme simplicity of the architectural problem. Also he cautions the reader against judging Greek art by the picturesque and romantic aspect of its half-ruined remains. The Parthenon, as we see it in its decay, is a most picturesque and charming ruin, with a great historical and poetic tradition; but "it was not to produce such a ruin as we now see that the Grecian artist thought and toiled. Admire the ruin to your heart's content, but do not allow too much of this romantic association to enter into your love of the artistic entity, of the lost Parthenon, which we have to create out of the air, as it were." This is very well

* "How to Judge Architecture: A Popular Guide to the Appreciation of Buildings." By Russell Sturgis, A.M., Ph.D. London: Macmillan and Co. 1904.

put, and what is often forgotten; and we may add that we think such a caution not unnecessary even in regard to the more romantic monuments of mediæval architecture. People are so accustomed to study the cathedrals in their now time-worn state that they seem often to forget that these buildings were once brand new—clean, sharp, and hard in their lines, and that some portion of their picturesque and romantic effect is due to surface decay. The chapter on Greek architecture as a whole is excellent, but we notice one characteristic omission. In regard to the curves and other refinements of adjustment of the Parthenon it is stated that "great folios of carefully drawn plates have been devoted to the exact curvature of the entasis and to the more recently discovered irregularities; and a minute series of measurements have been made, by which the whole amount of the irregularity in any one case is now easily ascertainable"; but the fact that these "great folios" and "careful measurements" were made by one man, and that man an English architect, is suppressed. This is the second or third time—certainly not the first time, that we have noticed references in American books to Mr. Penrose's work on the Parthenon without their author being given the credit of them. We wish we could think that this was mere ignorance. We may add that if the restored model of the Parthenon, in the Museum of Art at New York, shows the entasis of the columns so as to be prominently evident in the illustration given, where the nearest column is only $1\frac{3}{4}$ in. high, the entasis must be much exaggerated in the model, and the impression conveyed to the reader is incorrect. The entasis is hardly perceptible to the eye in a photograph from the building of three times that size. In fact, it seems to have been part of the refinement of the Parthenon that the entasis should not be prominently visible; it was rather a correction of the tendency to an apparent hollowness of outline.

In the second chapter, on Late Greek and Roman design, a useful distinction is drawn between the two different ways of judging of Greek buildings—the historical and critical view of them, as buildings "once very real and really put to use," and the modern traditional way, "by means of which a small body of writers and lecturers swayed architectural opinion for a century and a half, and until the accurate examination and close study given to the subject in the second half of the XIXth century had produced its effect." The author goes on, however, to point out the greater direct effect upon modern architecture of the Roman version of Greek columnar styles, through which alone the Renaissance architects knew the latter at all. Mr. Sturgis wishes to substitute for "Renaissance" the Italian word "Risorgimento," wishing that to be applied to the Italian movement and Renaissance confined to the French work; but though this may be historically and philologically correct, it is too late for that now; "Renaissance" is an adopted English word with its own acquired and fully recognised meaning; to adopt "Risorgimento" seems rather pedantic. Besides, the French Renaissance, the Renaissance all over Europe, was due directly to Italian influence, and the word "Renaissance" expresses the whole movement throughout the European world.

We need not follow the author through his chapters on early and central mediæval design and on Byzantine architecture; their main history and characteristics are well outlined. In regard to the Byzantine style, he touches on the peculiar absence of exterior effect in St. Sophia and other typical churches of the style, and suggests the cause of it, perhaps rightly, in the prevalent character of Levantine street architecture, or want of architecture. The blank outer walls are merely a screen to an often rich interior; so that architecture altogether had come to be regarded rather from the interior than the exterior. In an American book on architecture, it is a satisfaction and a surprise to find any recognition of the beauty of English Gothic, and an illustration of Salisbury given as an example of that rare incident—a mediæval cathedral complete according to the original intention or nearly so; attention having been drawn to the incompleteness of all the French cathedral, no doubt partly accounted for by their more ambitious scale. In the chapter on Late Mediæval design, we notice a good remark, introduced incidentally, in regard to the manner in which design came to supersede constructional character. "Jacopo Sansovino and Christopher Wren were great builders, but their designs were not in any special way the better for that. Their work is marked everywhere with the modern characteristic of being designed abstractly, and as if intended to be carved out of a single block, and afterwards put into terms of mortar-masonry and cut stone, because that was the only way in which the builders of the time could proceed." Very true, and that is exactly one of the radical differences between Renaissance and mediæval architecture. But, after all, may not the same be said of Greek architecture? Was not that conceived as abstract design, and is there not considerable evidence that the Greeks endeavoured as far as possible to obliterate the unavoidable jointing of masonry in their temples? There was no sham construction in Greek architecture, certainly, as there is in St. Paul's; but it can hardly be said that Greek architectural design, any more than Renaissance, was a design evolved from conditions of masonry construction.

A point noticed in the chapter on Revived Classic, and which has been rather overlooked, is that the first introduction of the applied pilaster in Renaissance architecture was evidently not regarded altogether as a success; that the Rucellai façade, with its exceedingly mechanical pilaster design, was thirty years previous to the Strozzi and Riccardi palaces. As Mr. Sturgis remarks, "It is surprising to see how much common-sense there was among these early lovers of the antique grandeur." The remarks on St. Peter's are good, and rather novel in their suggestion, and should receive attention.

The later chapters of Mr. Sturgis's book, on the modern revivals and modern architecture, contain a great deal of thoughtful criticism. and they are the portions which best fulfil the title of the book in showing "how to judge architecture." Among passages that we marked for reference are one on page 165, on the influence of fashion in the liking and disliking of certain details; that on page 167, recommending the reader not to dismiss an attractive or even impressive building on the easy judgment of the guide book, that "this is of a late date, or a corrupt style"; that styles not to treated with grave consideration may be charming in their more perfect moments; that "it is only the rational styles, based on structure, which in architecture have any uniform greatness." We may also draw attention to the distinction pointed out (p. 187) between the methods of imitation in XIXth. century architecture and those of the Renaissance architects; the latter, as has been observed more than once in these pages, were not mere copyists; they made new and original use of the materials drawn from the great quarry of ancient Rome. The differences between the modern architectural temper and method in different countries are briefly and well analysed in the concluding chapter, with the conclusion (which we hold to be perfectly sound and to the point) that under present circumstances "thought must replace the lost tradition."

Whether or not the perusal of Mr. Sturgis's book will fully equip the general reader as a judge of architecture, it will, at all events, give him considerable help towards it. The literary style is clear and agreeable, and the reader's comprehension is assisted by numerous illustrations from photographs; but there are no plans—a very serious defect in an attempt to help people to form a sound judgment on architecture. We suppose it is feared that plans would frighten away the popular reader, but that is rather a weak concession to his feelings, seeing that to understand the meaning of a plan, and its relation to the design, is exactly one of the things that people most need to be taught.

Since we have adopted Mr. Sturgis's title as the heading of this article, let us conclude with a word as to how architects should judge architecture. One may begin with one or two negatives: not on the mere consideration whether it is your own favourite style; not in respect of picturesque effect unconnected with plan; not on the question whether the architect is one of your own "set" (which seems to give the cue to a good deal of so-called criticism). Perhaps the questions to put to oneself about a design or a building, to come to a "judgment" on it, may be formulated thus:—(1) Is the plan adapted to, and does it arise out of, the purpose of the building? (2) Has the plan a distinct ruling purpose or idea in it, in addition to its practical suitability? Otherwise it is rather building than architecture. (3) Does the exterior design arise out of and express the plan and structure? (4) Has it also a distinctive governing idea? But if No. 2 has been answered in the affirmative, then the affirmative to No. 4 follows necessarily on that to No. 3. (5) Does the detail show refinement and careful study? The latter is one of the most important points of all. Perhaps more modern buildings are spoiled, and fall short of being architectural art, through

careless, commonplace, and mechanical detail than through any other cause.

And as a rider it may be added—judge old buildings as you would judge modern ones. The tendency to accept or admire anything because it is ancient is an amiable but a mischievous weakness, and subversive of sound architectural judgment.

## NOTES.

The Revival of English Canals.

THERE is no doubt that one of the most important matters awaiting attention in the present day is the improvement of the existing canal systems, which might be reorganised to the great benefit of trade and commerce. A complaint frequently made by manufacturers is that they are seriously handicapped in competition with foreign rivals by excessive railway rates. Agitation sometimes results in the granting of small reductions, but still no substantial relief is given, nor can it be expected. The liberation of the canals from the stifling control of the great railway companies would be the first step towards affording the necessary relief, but considerable alterations in the existing waterways would be necessary before they could be of much use. An excellent scheme for the reconstitution of the canals has recently been submitted to the members of the Liverpool Chamber of Commerce, and there really seem to be no engineering difficulties to prevent its realisation. The proposal is to make the canals at least 6 ft. deep, with an average width of 80 ft., and to provide them with locks 235 ft. long by 32 ft. wide, large enough for a tug and five barges to pass at one time. The scheme in question relates to the improvement of 240 miles of canals connecting the most important manufacturing and mercantile districts of the country. The cost would be no doubt heavy, but the benefit to be reaped in the reduction of freight charges would probably be sufficient to justify the necessary expenditure.

The Commissioners of Woods and Forests.

IT will we think surprise a good many persons to know that not only do the Commissioners of Woods and Forests sell property of the Crown, but that they not seldom buy other property. We should say that while it is not desirable for the Crown to sell property, except when this can be done advantageously, yet that it is undesirable for the estates of the Crown to be increased even on the score of expense of management alone. It is better that the money realised by sales of property should be held in Consols or other securities. According to the Report for 1903, the Commissioners during last year sold 78,000*l*. worth of property, the chief item of which is 36,000*l*. for Nos. 16 to 21, Cranborne-street. On the other hand 77,000*l*. has been spent on the purchase of property. Here the principal items are 58,000*l*. which was paid for freehold premises, Nos. 172A, 174, 176, and part of 178, Regent-street, and 60, King-street, and 10,000*l*. for 152a. 1r. 9p. of land and a fishery in the Thames at Datchet. Incidentally the value of Thames-side land is illustrated by the fact that the Commissioners sold about one acre of land and a cottage thereon near Boveney Lock for 500*l*. But the point which we desire to suggest for public consideration is whether the purchase of land and other property by the Crown is in itself desirable. Why should a large property in the Thames Valley be purchased, adding to the land held by other than individuals? The holding of land by a Government Department lessens freedom of movement in the transfer of land, introduces in rural districts absentee landlords, and causes hard-and-fast rules of management to prevail.

The Rating of Land Values.

THE Land Values (Assessment and Rating) Bill has passed its second reading, and been referred to the Standing Committee on Law. What its ultimate fate will be remains to be seen, but the principle of rating on fictitious values is a serious innovation not likely to be accepted without consideration. That the municipalities whose extravagant policies have so increased the rates and damaged their own credit should favour a scheme which opens up a new prospect of their being able to continue this policy, and to enable them to obtain funds which under existing conditions they can no longer do in the market, is but natural. The building speculator also must consider the measure in all respects admirable, but how will it affect the community at large? Why should a fictitious value for rating purposes be placed on land and a penalty be imposed on properties not required for building according to the ordinary principles of supply and demand? In an already thickly-populated country is such a course expedient, and how do the municipalities justify their zeal for this measure whilst they themselves are expending large sums out of the rates to secure open spaces, often at fancy values, alleging such an expenditure to be an absolute necessity for the public health near cities and congested areas? The brevity of the debate seems to point to the fact that the Bill is not likely to survive, but its importance to the general public cannot be overlooked.

The Building By-laws Reform Association.

WE welcome the first report of the Building By-laws Reform Association, the office of which is at 45, Parliament-street. One reason why we do so is because unquestionably the progress of sanitary reform is hindered instead of advanced by by-laws and regulations which irritate when they are not needed. Some of the by-laws and rules which are now made obligatory in rural districts are wholly out of place, but it is difficult for an individual to obtain their alteration, though if assisted by an association it is possible. The present report gives an instance of the pedantry of these rules. A local authority sought to remove a billiard-room attached to a country house standing in its own grounds because it was not built of brick. There is also no doubt, as pointed out in this same report, that pedantic by-laws prevent the rehousing of the poor in rural districts. Cottages should, of course, have a good water supply and healthy sanitation, but there is no necessity for local bodies to make all sorts of rules and regulations which increase the cost of cottages without adding to their actual improvement from a sanitary point of view. Indeed nothing is more remarkable than the laxity of many local authorities in enforcing elementary rules of sanitation and water supply and their strictness in regard to unnecessary by-laws.

Decisions under the Public Health Acts.

TWO SHORT points may be noted on the Public Health Acts this week. In the case of London and North-Western Railway *v.* Mayor, etc., of the City of Westminster (*The Builder*, *ante*, p. 293) the point decided by the Court of Appeal is a simple one that where a sanitary authority provides public conveniences, for which purpose section 44 sub-s. (2) of the Public Health (London) Act, 1891, vests the subsoil of any road, exclusive of the footway, in them, they must strictly confine themselves to the powers conferred by the section. In this case the public conveniences were capable of being used as a subway as well as lavatories, etc., and this was held to constitute something outside their powers. The second case, Wing *v.* Epsom Urban District Council, decided a purely technical point. Under section 96 of the Public Health Act, 1875, the Court of Summary Jurisdiction had issued an order calling upon the respondent to abate a nuisance. Under section 251 the Court had been constituted of two or more magistrates at the hearing, but only one of them had signed the order. The respondent had the somewhat negative satisfaction of proving the order to be invalid because it had not also been signed by at least two magistrates.

New Motor-car Regulations.

THE new regulations issued by the Local Government Board to the local authorities in respect to motor-cars only call for short comment in these pages. Clause V. is a move in the right direction, since it is directed to checking the noise often made by stationary cars, which seems to try the nerves of horses which have no objection to the cars whilst in motion. The car must now be so constructed that when stationary the machinery shall make no noise. The Board have considered the question of the excessive brilliancy of the lights now used on motor-cars, but at present have made no regulation on the subject except to prohibit the use of search-lights. We have already drawn attention to the serious danger attendant on using lights unnecessarily brilliant, and are glad to see this matter is still to receive the attention of the Board, which, in a circular accompanying the regulations, recommends motorists to take voluntary action in the matter, and to thus render a regulation unnecessary. The maximum width of motor-cars is increased from 6 ft. 6 in. to 7 ft. 2 in., but the question of any increase in weight remains under consideration.

Electric Lighting Networks.

THE interesting paper by Mr. W. E. Groves which was read before the Birmingham local section of the Institution of Electrical Engineers this week treats of a subject the importance of which we pointed out six or seven years ago. If it

be important in Birmingham to measure the insulation resistance and the leakage losses from direct current networks it is no less important in London. Mr. Groves treats the subject from the Central Station engineer's point of view, and, regarding the interruption of the supply as the greatest catastrophe that can happen, describes various heroic methods of continuing the supply even when there is a bad fault on one of the mains. Some of these methods involve making temporary connexions which will make the consumers' meters run backwards until the necessary repairs on the mains have been made. The records of the meters cancelled by these methods he rightly regards as a small price to pay for keeping up the reputation of the supply company. The numerous cross connexions in large networks make it extremely difficult to localise faults, and we think that some of the "rough-and-ready" methods advocated by Mr. Groves will be found in practice more valuable than the elaborate methods described in text-books. The author has invented an instrument which reads the insulation resistance of the whole network directly when connected to the mains. There can now, therefore, be no excuse for engineers refusing to publish this figure. It will be very interesting to know what these figures are for the distributing systems in London. When they are published we can easily calculate the maximum and minimum possible values of the electrical energy lost by leakage, and also—which will interest the water and gas companies more—the maximum and minimum values between which the actual leakage currents must lie. Tests that we made a few years ago proved that these currents were in some cases very large. Seeing that no complaints are made, we can only suppose that although these currents are large individually, yet, compared with the amount of metal buried underground in London, they must be infinitesimal. They must, however, have done damage at particular points.

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Institute of Architects of New South Wales.

WE have received the first number, dated January 1 of this year, of the *Journal* of the Institute of Architects of New South Wales. It is got out in a handsome form; though we do not like, in a decorative sense, the twisted and contorted tree trunk which ornaments the cover. The elevation of an Ionic temple in the rear-plane, with radiations from it, may be taken as an appropriate piece of symbolism, indicating that here also the architectural wilderness may be made to "blossom with the Grecian rose," but the tree is anything but Greek in decorative principle or style. The first article, "The City Beautiful," is on the subject of Art Commissions to provide the adequate architectural treatment of cities (in part suggested by Sir W. Emerson's paper on "The Necessity for Official Control over Architecture"), and concludes—

"We have very great need of a new and comprehensive Building Act, for it is absolutely essential that our buildings should be constructively strong and sanitary; but some form of artistic control would seem to be of at least equal importance. An Art Commission on somewhat broader lines than that of New York would have power to exercise this control, and while the cost to the city would be trifling, the gain would be far-reaching and incalculable."

The new central railway station in course of erection at Sydney is the subject of an article and an illustration. The design appears to have been prepared in the Department of Public Works, and no architect's name is given; as a whole it is a dignified and pleasing design on classical lines, superior in general effect to many large railway stations in England; of the details one cannot, of course, judge from a perspective view on a small scale. Mr. H. D. Souter writes an article on "Architectural Sydney from a non-architectural point of view"; he is bitterly satirical, and probably with good reason, against the architecture and sculpture of the past quarter of a century, but looks forward to a good promise of improvement. An article on the competition for the Australian Mutual Provident Society's new premises at Melbourne gives illustrations of some of the designs. That by Messrs. Sulman and Power, placed first, is a piece of refined and well-balanced classic work; that of Messrs. Robertson and Marks is commonplace; that of Messrs. Hall and Dods, though perhaps rather too fortress-like, shows a certain power and originality. From the Report of the Council, at the end of the *Journal*, we learn that the Institute now numbers thirty-six Fellows, twenty-seven Associates, one Retired Fellow, six Honorary Members, and fourteen Students, making a total of eighty-four. For a Society so limited in numbers this publication, if it is to be carried on monthly, is a most spirited effort, and we wish it every success.

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The Leicester Galleries.

AT the Leicester Galleries is an exhibition of water-colour drawings of Venice by Mr. Mortimer Menpes. We fear it must be said that architectural subjects are not Mr. Menpes's strong point. He has a great eye for colour, but not apparently for form—architectural form at all events. In various drawings in which the Salute Church appears it is dreadfully maltreated—hardly recognisable, in fact. In "St. Mark's Basin" (27) the Campanile is all crooked; but too many painters have that way with them; they seem to think as long as they have the colour of a building it is no matter whether it stands straight or not. Where Mr. Menpes succeeds is in small bits of the house fronts, treated almost in elevation, in which the colour of materials is the predominant interest; and some of the picturesque out-of-the-way corners of Venice are well shown. But the architectural glories of Venice can hardly be said to be adequately illustrated in this collection.

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Modern Gallery.

IN a small room called the "Modern Gallery Annexe," at 175, Bond-street, is another collection of illustrations of Venice, "The City of the Waters," by two ladies, Miss Mary and Miss Lydia Pringle. Here, again, we find that with a great deal of perception of the picturesque in outline and colour, the drawings showing important architectural monuments are failures, at least, where a near view is attempted, though there is a very pretty distant view of San Giorgio (21) by Miss Mary Pringle. The drawings of picturesque corners in the smaller canals are, however, many of them, very good in colour and composition. We may mention especially Nos. 16, 28, 30, and 31, by Miss Mary Pringle (the last-named, "Desdemona's house," a much better finished architectural bit than any others in the collection), and Nos. 10, 11, 36, and 46, by Miss Lydia Pringle.

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The Greek Play, Bradfield.

THE triennial performance of a Greek play in the open-air theatre at Bradfield College comes round again this year—an event always welcome. On this occasion the *Alcestis* of Euripides is to be the play; it has been given before in the same theatre, but we presume the actors in that representation will have given place to new-comers, as the parts are all played by pupils at the school. The instruments used will be harps of ancient model and scale, and flutes copied from those found at Pompeii; in outer appearance that is—whether they sound like those of Pompeii, who can say? The days of performance are Tuesday, June 21, Thursday, June 23, Saturday, June 25, Monday, June 27, and Tuesday, June 28. Further information can be obtained from the Hon. Secretary of the Greek Play Committee, Bradfield College, Berks.

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## THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE usual fortnightly meeting of the Royal Institute of British Architects was held on Monday at No. 9, Conduit-street, Regent-street, Mr. A. Darbyshire, F.S.A. (Vice-President), Manchester, in the chair.

*The late Dr. Murray.*

Mr. Alex. Graham (Hon. Sec.) said he had to announce the decease of Mr. James W. Twist, of Bloemfontein, South Africa, who was elected an Associate in 1891. He had also to announce with very deep regret the decease of a highly esteemed and distinguished hon. Associate, Dr. Alexander Stewart Murray, Keeper of the Greek and Roman Antiquities at the British Museum. He was sure that no words of his could strengthen the expressions of opinion recorded in the daily Press of the meritorious career of Dr. Murray. As architects they were under a debt of gratitude to Dr. Murray for his kind services and his co-operation with them in matters in which he was a master. Dr. Murray was acquainted with almost every branch of classical archæology, and in one in particular he was the authority pre-eminent, which was that of Greek sculpture. He need not add anything with regard to his literary achievements, because they were known to nearly all of them. He might, however, say this, that there was nothing which Dr. Murray touched in which he did not achieve success. As a close reasoner and very thoughtful observer, Dr. Murray belonged to a type of students that he was afraid was diminishing in numbers rather than increasing, and that was due perhaps to the rapidity of movement in modern times and to the hurry in which most things were done. It was for that reason that they deplored the loss of so distinguished a man as Dr. Murray. Many of them who came in contact with him, not only in those rooms, in which he was a familiar figure, but in his official capacity at the British Museum, had good reason to look upon him not only as a friend but as an adviser who was ready to impart information on many subjects in which he was a master. To those who came in contact with him Dr. Murray would always remain a pleasant memory. The members of the Institute who saw him at those Rooms would always think of him as a kind friend and as a learned man. As an Institute they could not do less than record their feelings by a sympathetic letter to his widow and relatives in recognition of the kind services he rendered them, and also in full appreciation of his great work during a long career in the cause of classical archæology. He

therefore asked them in silence to approve of a letter being sent to Dr. Murray's relatives expressing their feelings of so good and learned a man.

The motion was agreed to in silence.

*Plaster Decoration.*

Mr. J. D. Crace then read a paper on "Plaster Decoration," of which the following is an abstract:—

Touching the origin of the plastic art, the author said it was reasonable to suppose that such fictile substances as clay were wrought into form even before man learned to bake earthen vessels. The mud-built houses of man, even in a barbaric state, could not have been void of all attempt at ornamentation when the material itself offered such facilities. The surface of mud-brick walls must soon have been "rendered" with a coating of the same material, which, whilst moist, would readily receive any impress—the imprints of the workman's hand, marks left by his rough tools; a chance symmetry would lead him to intentional device, impressed by his fingers or traced with a stick.

The use of stone led to the demand for some material which would adhere to stone and give a uniform surface, and this was found in simple compositions having burnt lime as the binding ingredient. Plaster, in the form of a very fine, smooth, coating of lime-putty, was used to give a finished surface to the stone structures of Egypt in very early times, but does not seem to have been much used plastically for ornamentation. It was similarly used by the Greeks, and the author gave reasons for his inference that stucco was used decoratively in an early period of Greek history. Among the many wonderful revelations of Mr. Arthur Evans's explorations in Crete are the stucco decorations in relief of the walls of the Palace of Knossos which was destroyed before 1500 B.C.

Beautiful specimens of decorative stucco-work have been unearthed in excavating the ancient sites of Rome and the surrounding country. The author referred to those at the Baths of Titus discovered in the XVIth century, to those at Herculaneum and Pompeii, and to the decoration of two sepulchral chambers discovered on the Via Latina dating about A.D. 160. In the Farnesina grounds remains of buildings have been unearthed with stucco reliefs unsurpassable for elegance and refinement of execution. One great value of these works is the lesson they teach in the adjustment of the actual treatment in execution to the nature of the material. The whole surface speaks aloud of the ready and dexterous use of fingers and tools on a light plastic material. One almost imagines the stucco yet moist, still impressible to the touch. It is as if some fairy goddess had found it soft and lightly fingered it. There is a sense of evanescence about it, whilst the charm of perfect attainment remains.

The author then turned to a very beautiful but very different growth of plaster decoration developed under the Mohammedan conquerors, describing the decorations of the great Mosque of Ibn Tooloon at Cairo (IXth century). In the Arabic art of Egypt plaster continued to be used as an important factor in decoration during the next five centuries. The ornamentation of the domes and the use of a fine stucco in low-relief ornament, as a preparation for gilding and colour on the wooden beams of its flat roofs, are specially noteworthy. The palace of the Alhambra is the very apotheosis of plaster—of plaster casting carried perhaps to an excess of richness and elaboration, but never losing its true quality of ornament designed purposely for casting. The beautiful effects of a mere repeat casting the author thought were attained because (1) the designers thoroughly understood grace of line and how to fill their spaces; (2) they never lost sight of the fact that the work was to be cast; (3) most important of all, the repetition did not include the representation of natural objects, for it is where representations of nature are concerned that repetition is offensive.

In European art during mediæval times we get little glimpse of the decorative use of stucco until the XVth century. An original and striking example is to be seen in the drum of the dome of San Eustorgio at Milan, the work of Michelozzo Michelozzi, of Florence, said to have been executed in 1462. In the second half of the XVth century Bernardino Pinturicchio was making considerable use of low-relief enrichments, not only for the mouldings with which he divided the surfaces he had to decorate, but as ornamental features within the paintings themselves. A few years after Bramante was at work on St. Peter's. His investigations, says Vasari, resulted in the discovery of the method of preparing stucco employed by the ancients, the secret of which had been lost in their ruin and remained concealed ever since. Vasari relates how Raffaelle and Giovanni da Udine went together to see some subterranean chambers then just discovered in excavating the Baths of Titus. Giovanni was so much impressed by the stucco decorations with which they were covered that he devoted himself to their study, and reproduced them with so much grace and facility that there was only now wanting to him the knowledge how to compound the stucco. At length, by compounding finely powdered white marble with the lime from white travertine, he succeeded in producing the stucco of the ancients. Raffaelle at once caused Giovanni to decorate all the vaultings of the Papal Loggie in stucco. Pierino del Vaga, another of that wonderful band of young artists in the Vatican, stands pre-eminent as an ornamentist and as a decorative colourist; his stucco-work has a quality of fine decorative appropriateness, both in design and scale, that has been surpassed by none. Of his bolder conceptions the great ceiling of the Sala Regia is a fine example. Alessandro Vittoria was one of the best-known stucco-workers in the latter half of the XVIth century. His work under Sansovino at Venice, in the Libreria, and in the Scala d'Oro of the Ducal Palace are characteristic examples of his style.

Francis I. attracted to France some of the most capable of the Italian artists skilled in stucco. Primaticcio and Il Rosso came about 1530, and their wonderful stucco decorations at Fontainebleau long influenced French design and French sculpture. Niccolo dell Abbate followed twenty years later, and then his three sons, the youngest becoming after a time the director or manager of these decorative works. Their work is a fine field for the study of what may be done in stucco, and it was the parent of the rich decorations of Louis XIV.'s reign, which, in their turn, became the model for civilised Europe.

Henry VIII. was also very successful in securing the services of able artists in England, many of them pupils or relations of those who were at work on the masterpieces of the Vatican. Pietro Torrigiano, who was among the earliest, completed the bronze monument of Henry VII. in 1519.

It was to the Palace of Nonsuch that the new stream of talent was directed; although not a vestige of it now remains, the names of some of the men who adorned it are a guarantee that the work was neither coarse nor commonplace. As to the question lately raised about the external panels of Nonsuch being in stucco, the author said there was not the smallest doubt on the subject. There were plenty of examples done more roughly within the next seventy or eighty years which remain to this day, in spite of exposure and neglect.

External decorative work in plaster continued to be a feature of many English houses down to the end of the XVIIth century. But the interior was the more important field, and from the time of Nonsuch for a century no house of any pretence was without its elaborate plaster ceiling and frieze. Admirable in many ways as these old English ceilings are, few of the men who did them had either the art or the skill of the Italians who made ornamental plaster-work popular. The latter endeavoured to make their work perfect in modelling and finish. Each figure was a work of art. In the English plaster-work, however, scarcely a figure can be found that is not more or less barbaric in execution, and the minor work, effective as it is, is often greatly wanting in grace of line and in intelligent modelling.

The next step in English plaster-work leads straight to the classic work of Jones and Wren. The gap caused by the Civil War made the change more complete. Building operations after the Great Fire opened the way to new men and methods. French and Italian plaster-workers were again invited to England in Charles II.'s reign. Besides the work in St. Paul's, St. Stephen's Walbrook, and other City churches, the chapel of Trinity College, Oxford, may be cited as a good typical specimen of plaster ornamentation. A feature of some of the plaster decoration of the end of the XVIIth century is the elaborate modelling of fruit, flowers, and foliage in full relief, often in parts quite detached from the grounds, and either supported by wires embedded in the plaster or by small sticks of tough wood. This work, full as it is of artistic ingenuity and clever modelling, was by that very ingenuity departing from any true principles of stucco-work, and therefore hastening the decay of the art. A notable example is the ceiling of the Chapel of the Royal Hospital, Kilmainham.

The next modification of style was largely due to Kent. In his designs the plaster ornamentation is mainly used as architectural enrichment, bold in treatment—sometimes too bold for the space, but effective in its way. Following closely on Kent's work came a flood of plaster ornament derived from the French work of the time (Louis XV.). This was sometimes very good—often straggling and purposeless, yet not without a certain elegance. The best of it was at least partly modelled, but the greater part was cast and fixed. With this style stucco modelling practically came to an end. All that followed was cast and fixed.

The change of style brought about by the brothers Adam was due to the same influence which had produced the detail of the Vatican Loggie and the Villa Madama—namely, that of the antique stucchi in the excavated ruins in Rome. The difference in the result may be thus accounted for. Giovanni da Udine studied them, as an artist, by endeavouring to produce similar work with his own hands. Robert Adam, as a draughtsman, copied them on paper, as did probably the Frenchmen through whom France adopted the style. It was undoubtedly elegant and the effect refined; and, since the method of reproduction was mechanical, it lent itself to extensive use.

Much good plaster-work has been done in the last half of the XIXth century—always in the form of attempts, sometimes very successful, to reproduce a past style, and by casting. "Fibrous plaster," introduced since 1861, is a valuable innovation, and presents immense advantages. It does away with the danger of enormous overhead weight, and requires so much the less timber structure to carry it; it can be executed quickly, and it dries quickly.

The facility of plaster-work is at once its recommendation and its danger. It is, perhaps, well to be sometimes reminded that the simplest materials have not been scorned by the greatest men, and that the finished result of any art pleases not only by the talent bestowed on it, but by the fitness of the limitations which the artist has imposed on himself.

The illustrations to Mr. Crace's paper included numerous lantern views, photographs, and specimens of plaster decoration.

At the conclusion of his paper Mr. Crace drew attention to some specimens of plaster work, including an actual piece of the ceiling of the hospital at Kilmainham, showing the sticks which support the elaborate modelling of fruit, flowers, etc.

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The Chairman said they had listened to a most interesting paper, both analytical and historical, and their thanks were due to Mr. Crace for the trouble and time he had spent on it.

Mr. R. Phené Spiers said he was glad to have the opportunity of expressing their thanks to Mr. Crace for being willing to prepare a paper on the subject, although it had been treated in that room before both by the Institute and the Association. Mr. Crace had brought to their knowledge new facts, and had given a general historical survey of the subject, which was of great value. He observed also that Mr. Crace had taken the opportunity to refer to mistakes often made in modern work, in which defects were imitated and were looked upon as beauties. He was glad that Mr. Crace had referred to this, because in one or two papers which had been read there that had been emphasised as being rather an important thing to arrive at. Mr. Crace might perhaps have claimed for plaster-work more than even he had done when he referred to the walls of many of the earlier buildings having been coated with stucco. In all probability those crude brick walls would not have lasted all these years had they not been so covered. It was stucco which had aided their preservation to the present day; and they found now in the ruins of Mesopotamia, which dated from 3,000 to 3,500 B.C., walls covered with stucco which owed their preservation to that. Mr. Crace had referred to the exceedingly interesting lecture which Dr. Evans gave there upon Knossos, which carried them back to a period of something like 1,800 years B.C., and he had shown them several heads—one a calf's or bull's head—and also a figure of extraordinary pure modelling and of a kind

which they had no conception of. There were also a large number of decorative details which were employed in the palace, and this stucco work was in fact the chief means of decorating the interior of the palace. All the capitals, likewise, were moulded. Amongst the most interesting examples which had been shown them that night were those from Rome, and the series of scenes found in the Baths of Titus and in various temples were of most extraordinary beauty. A book had lately been published, and, in going through it, he recognised one or two scenes which he had sketched in his early days and had forgotten for the moment where they came from. Looking at these sketches and at these photographs it occurred to him that one of the great beauties of the work found in the Roman temples, and which had scarcely been recognised, was that they were infinitely more beautiful when on a curved surface; Adam copied all the ceilings he came across in Rome, but the drawings were always reproduced upon a flat ceiling, and, that being so, it seemed to him that they never had the same effect as on the ceilings in Rome. There was always a tendency in all ceilings to "slack," and he could not help feeling how much finer it would have been if in these English ceilings there had been a curve in. The work in Rome seemed more applicable to a curved surface than a flat surface, and he did not know why that should not be adopted. There was no difficulty in doing it, and he was certain that the decoration which was known as Adam's, would look infinitely better if there was a curve. He had on one or two occasions been able to do it, and the decoration at once lent itself to that form. The very beautiful frieze of Mohammedan decoration which had been shown, Mr. Crace had pointed out was repetition casting, and there was a curious instance of this in that the most successful court in the Crystal Palace was that done by Owen Jones. It was the closest resemblance which had ever been made of the work at the Alhambra. It might be interesting to Mr. Crace, as he had shown them a photograph of the famous work in the dome of San Eustorgio at Milan by Michelozzi, to know that there was a small model of it in South Kensington. It was deemed so beautiful that they had a small model made, and one could see the effect of the beautiful figures. He felt that the decorations looked better if seen from below than as they had seen them that night from above. They were meant to be seen from the floor, and he thought they were more beautiful seen in that direction. There had lately been discovered amongst the Wallace collection a very fine bronze, which had been hidden behind a picture, and this had now been cleaned and a photograph of it published in the *Burlington Magazine*. It was a bronze probably of the XVIth century, and they saw precisely the same sort of figures as those which Michelozzi employed. There was a very fine ceiling at the Dolphin Hotel, Southampton, which was one of the most beautiful he knew, and it was well worth going to the hotel to see. They had, of course, a great affection for Chambers and his work, and there were some magnificent ceilings by him in Somerset House. He was anxious to see the rooms occupied by the Royal Academy from 1780 to 1838, and he got permission to go through the rooms, and he found to his delight that these ceilings were almost intact. They were extremely interesting, because they were decorated by many members of the Academy, and they were all set out and designed by Chambers. Mr. Crace had had to go to a very large number of countries to get his views, and they had had that night a *résumé* of the history of plaster-work—had been able to see the value of plaster in ancient times and the extreme advantages it suggested for future use. Of late its use had been brought into account again, and the Art Workers' Guild had had one or two demonstrations, where artists had come down and had actually done the modelling before them. He thought that kind of work should be encouraged, and he trusted that Mr. Crace's paper would have the effect of drawing the attention of the public to it, so that it might be more employed in the future.

Mr. G. H. Fellowes Prynne, in seconding the motion, said that those who had listened to papers which Mr. Crace had read before the Institute and before the Association knew that his heart was in his work, and that whatever he took up he took up with thoroughness. The subject that night was intensely interesting in every way. They who lived in England must be excused for thinking that they could not generally advocate this plaster or stucco work externally. Certainly the examples they had before them in this country, except those of two or three centuries ago, were not satisfactory for external work. When they thought of stucco palaces and houses of the Victorian Era they looked upon them rather in the way of examples not to be imitated, and that was not to be wondered at. Surely it was not a material for external treatment in that country, with their very variable and extraordinarily damp climate. Over and over again they found that cement prepared in the best possible way would flake off from the effects of the weather, and for that reason he supposed it had not been studied as an exterior material which could be used ornamentally with a great amount of success in this country. Of course, it was impossible to read of the past without being impressed with the way that it was used in the earliest days. In fact, in the examples brought before them that night they found the very models from which Adam might have worked out his designs. They saw work represented to be of the IInd century with a beauty of design and grace and freedom which even Adam found it difficult to get. That was the wonderful part of their work—when they looked backwards the examples were almost overwhelming, and one felt how very much behind they were in many ways to those who had long gone before them. The examples put on the screen gave them such excellent ideas of what was the right treatment of plaster for internal decoration that they must all feel that the paper was of intense value. It brought before them again the really right treatment of plaster-work. It reminded them of that later Renaissance period they had passed through, but when one saw the ceilings overburdened with hanging fruit and flowers one felt that really it was not the right treatment somehow. It was beautiful in itself in some ways, but it was not the design one would choose for plaster-work. There, again they felt that the earlier men were before them; that these men seemed to grasp the value and limits of the material they had to deal with. In the Alhambra they seemed to have grasped the very elements of their material in getting their different surfaces. In such examples they had the right if not to copy design, at least to copy treatment of the material they had to deal with. They got to another interesting matter when dealing with fibrous plaster. There they were in advance, to a great extent, to those who had gone before, for surely in the use of fibrous plaster the limitations were very wide indeed. In that material they were able to bring out in a very light way some of the most beautiful effects, for they were able to get the most perfect modelling on a very light surface. What he meant was that the heavy figures they saw in the last century must to a degree pull down the ceiling, but with fibrous plaster the work was so light that there was no danger of the structural work being overburdened. In low relief work there surely must be a very large field. Mr. Moira he believed it was who had put up some panels of decoration in the Trocadera, and they really had an immense suggestiveness about them. For ornamentation of that character with figures, and with colours washed over and not overdecorated, he believed there was a large opening.

Mr. W. Aumonier, in supporting the vote of thanks, said he did not know that he had ever listened to a more interesting paper, and they had had wonderful illustrations of some of the old work. He, with a party of friends, some time ago saw the work which had been referred to at Rome, and it certainly struck him as being some of the most beautiful work he had ever seen. They looked very carefully at it to find out how it was done, but he did not think they came to any conclusion on that. The wonderful way in which it was modelled, apparently nearly all with steel tools, struck him as being very extraordinary. Mr. Grace had referred to work done as being none the better for being what they called defective, but what made the beauty of the Elizabethan ceilings was that it was all in harmony. He did not say that they wanted to save the defects of a fault, but to have a thing all hand worked was a thousand times better than if the mouldings had been worked by mechanical means and the ornaments had been modelled by hand.

The motion having been heartily agreed to,

Mr. Crace briefly replied, and thanked the mover and seconder for their remarks. With regard to the value of curved surfaces, he agreed to some extent with what Mr. Spiers had said. The light and shade took away the hardness of edge and gave something of the charming variable light of a landscape. At the same time do not let them run away with the idea that artistic merit was to be got by placing such work in particular positions or in particular circumstances. The Adam ornamentation, excellent and effective as it was, could not be spoken of in the same breath as the beautiful work he had shown from Rome. The one was a mere mechanical reproduction from the model and the other had from end to end the touch of the artist's hand. Mr. Fellowes Prynne had spoken of stucco and cement as not being suitable for exterior use in this country. He did not know that he was prepared to advocate it, and all that he had tried to point out was that lately the question had been raised whether the Palace of Nonsuch was decorated with plaster panels, and it was said that no one would have been so foolish as to do such a thing. As a matter of fact many people did do it, and there was work of the kind remaining now. He would like to mention that the models which were in the room included one or two bits from the Alhambra. One was lent him by Mr. Millar, who, he was very grieved to hear, died a few days ago. The other was lent to him by the Board of Education at South Kensington, and it exemplified in a very admirable way the point he urged in his paper of the value of different levels of surface where they wanted to produce richness without difficult modelling. He had to thank Messrs. Jackson for lending him some of the specimens in the room. One panel was from the frieze at Stanstead, which escaped destruction in the fire. He was also indebted to Mr. Batsford, to the Architectural Association Camera Club, and to South Kensington for photographs and slides he had shown, and to the Secretary of the New River Company for allowing him to take photographs of their very charming ceiling.

The Chairman announced that the next meeting would be held on March 28, when Mr. Stanley Peach would read a paper on "Electric Generating Stations."

The meeting then terminated.

## THE ARCHITECTURAL ASSOCIATION: SCHOOLS.

In our last issue we gave the first part of a paper by Mr. J. W. Simpson read before the last fortnightly meeting of the Architectural Association. The following is the conclusion of the paper and some notes of the discussion which followed:—

*Adjuncts to Scholastic Teaching.*—I have referred to the secondary school as necessarily costly. It must not be understood by this that I refer to greater elaboration of finish or detail; it is in additional accommodation, owing to the greater subdivision of classes and the increased number of subjects to be provided for, that cost will be incurred. Also, there will be many adjuncts to mere scholastic teaching, each demanding expenditure. To take a few of the more obvious by way of illustration. I can conceive of no school going beyond mere elementary teaching, without a museum. In one of those six volumes of the "New Review," issued under the dictatorship of the lamented William Ernest Henley, "written," as was said, "by a select few, and read by a select fewer," you may find a most fascinating symposium contributed by the High Master of St. Paul's Schools, Dr. Gow the present head of Westminster, and Dr. Wright of Mill Hill on the subject of public schools. The latter says, "In many schools there are really good museums, largely filled by the boys themselves. The departments of botany, zoology, and geology will be each under the management of one boy, and in the winter terms lectures are prepared and given—in many cases before an audience with many strangers present—by the boys themselves. The Photographic Society, also, is generally a vigorous institution, arranging competitions and exhibitions of work, and giving lectures on the various methods of fixing, toning, and printing. These societies, together with the carpenter's shop and the chemical laboratory, where there is always a band of enthusiasts, afford plenty of occupation for the scientific spirit, while the literary clubs are equally numerous. Many schools have a debating club meeting once a fortnight, a dramatic club, whose members both read and act plays; a literary club, and a reading club to manage the affairs of the library and reading room."

Mr. H. T. Wells, writing to much the same effect, says, "It should be possible to provide

a certain definite number of hours weekly in which the student should be required merely to show that he was doing something of a developmental kind; he would have his choice between the library, . . . in which he might either read or write, or the music master, the debating society, the museum, the art studio, the dramatic society, or any concern of the kind that the authorities had satisfactory reason for supposing to be alive and efficient."

Such a museum might well be combined with the library, one end of the room being furnished with a table for magazines and miscellaneous literature. Writing facilities should certainly be provided, and nooks contrived in the window openings with small reading tables. Then, again, there is the gymnasium, not the mere swing and bars of the elementary school, but a fully-fitted room with apparatus for physical development. A small stage at one end will be found both useful for supervising general work, and for taking special lessons. It will also be hailed with rapture by the dramatic society, that most effective of all classes for teaching elocution.

I would urge in addition some more satisfactory arrangement than a merely covered play-shed for use in bad weather. This may suffice for a day school, but for a boarding school, at any rate, a plainly-finished room is wanted, where high spirits may be allowed their natural effervescence. A simple method would be to leave piers only in the front and back walls of a portion of the building, filling in the openings with sliding partitions glazed with wire glass. These would stand open in fair weather, while the weather-side partitions would be closed in case of driving rain or snow. One side should be arranged to open towards the play-ground.

The hall is, above all things, important in the secondary school. The teaching is necessarily much subdivided, and classes will be small, probably reduced to some ten or twelve as events develop, and the hall will be to the scholars the symbol of the school as a united body and not as a class of instruction. And it should not be merely a wide corridor for the class rooms to open from, but a spacious apartment in which school tradition may find a congenial lodging, where naked utility shall be clothed upon with beauty of proportion, and large ideas prevail. It should be adapted for all sorts of school functions—lectures, examinations, dances, singing, concerts, and every possible form of common interest which will bring the school together and make the scholars realise themselves a part of its life.

*Exit in Case of Fire.*—Without attempting even to catalogue the list of requirements for our new higher education schools, there is one matter which I think deserves more attention than, in spite of terrible warnings, it has at present received. That is, the question of exit from school buildings in case of fire. What is the best form for the staircases, and what their best disposition? How would you deal with dormitories, cubicles, or single bedrooms as regards means of escape and prevention of panic? I hope we may have a paper later on on this subject, for it is one of very real interest and importance.

*Economy in School Building.*—To revert for a moment to the subject of economy in school building. It is perfectly evident that local authorities, however desirous they may be of repressing expenditure, will not be able, if their schools are to be kept abreast of educational advance, to reduce the accommodation at present provided. Rather will they find themselves compelled to increase it. This question of economy is to my mind a very serious one in view of the uneasiness prevailing as to municipal expenditure, and anything we as architects can do to assist the authorities to cut down expenses without impairing efficiency it is our bounden duty to attempt. We are too often, I hope always unjustly, accused of extravagance; generally because of some trifling matter of sculpture or ornament which has caught the eye of the objector. We have all known cases where the expenditure of a few pounds on a morsel of decoration which gave interest and artistic value to the whole composition, has excited more adverse comment and reproach than if the building had been raised 3 ft. all round. Now, it is not in such directions that saving in any well-designed building may be looked for. You shall scrape everything out of the work which renders it pleasant to look upon, and save but a trifle. True economy must be sought in the reduction of cubic content, and I would suggest that a narrow study be made of the heights necessary for your rooms. At present it is quite commonly directed by the school authority that the class rooms shall be 14 ft. or 15 ft. high. This is quite unnecessary, if a proper change of air be provided for by mechanical means. Once you have settled on the minimum height of window which will properly light your further desks—and with the tendency to smaller classes this will correspondingly diminish—you have found the height of your room. Instead of 14 ft. or 15 ft., 12 ft. 11 ft. or 10 ft. may suffice. Consider a moment what this means—from a two-story building of 30 ft. you will have subtracted perhaps 5 ft. or 6 ft. of height, say 15 to 20 per cent. over the whole building. For the reduced height means not only the twenty odd courses of one and a half brick or two brick wall, but lighter girdering, lower and cheaper stairs, better inter-communication, and, not least, longer and lower lines in your composition. Schools as now built are very apt to run into square, or even vertical, and unrestful lines in design.

To obtain true economy, two things are wanted. First—the rules of the controlling department must be elastic and interpreted with a liberal intelligence, to the encouraging of original thought on the part of the designers; second—local by-laws must not be permitted to override designs approved by the State Department. I might add a third want, but you will consider it superfluous, there are so many—a good architect.

*Requirements in School Buildings.*—I notice that Sir John Gorst, in his recent address to the Association of Technical Institutions, expressed the opinion that there was nothing which tended more to cause confusion in administration or to obstruct education than the attempt which has been made to divide education into three water-tight compartments, labelled elementary education, secondary education, and technical education, and to keep those compartments as far apart from one another as it was possible. He went on, it is reported, to declare that there were millions of young people in this country upon whom enormous sums had been spent in elementary education, and upon whom that money had been absolutely thrown away. His view, as I understand it, is that technical instruction should be introduced into both elementary and secondary schools as part of the regular curriculum.

Sir John Gorst is an educational authority whose opinions are worth having, and, looking to the fact that there has been a waste in technical education corresponding at least to that he speaks of in elementary matters, it may well be that some such combination as he indicates awaits us in the near future. If so, our type of plan will undergo a conforming change.

Now that both elementary and secondary education are under one and the same authority, there may prove to be no reason for their future conduct in entirely distinct buildings as heretofore. Great economy might be effected by the complete scholastic course being followed in the same establishment. Many technical and other departments of the school might be constructed for joint use. It would certainly do no harm to the younger children to have constantly before them the immediate results of the studies to which they themselves are bent; and that common centre of school life—the hall—to which I have already referred, would become doubly important as the assembly-place for the whole school.

I mention this as indicating how absolutely necessary it is for us architects to acquaint ourselves with the objects and methods of those responsible for education, if we are to appreciate their varying requirements and embody them in fitting buildings. He is but a poor architect who must have all his employer's ideas formulated before he attempts to design his building. The true artist will put himself in a position by previous study of his subject, to appreciate and aid by his suggestions the development of his client's aims.

*New Conditions.*—Gentlemen, we are looking upon the dawn of a new era in the education of our country. Bearing in mind that many of my hearers are yet upon the threshold of, as I trust, a prosperous and successful career, you will perhaps pardon me for having spoken to you less of actual school buildings than of the principles which underlie them. For it is the very root matter of good design that it shall arise from the comparative study of what has preceded it. Whether your knowledge of your subject be thorough or whether it be superficial, it shall nevertheless influence your work, in the former case to honour, in the latter to dishonour. It is for us architects then, to prepare ourselves at this dawn of a new day, lest that hoped for, but most searching, morning breeze called responsibility catch us unready.

I trust that to your hands may be entrusted many of the buildings to be erected under the new Act. And this, from no mere desire to see you with work to do, though there is nothing more agreeable to architects than to see work entrusted to their competent brethren. I was lately shown a table of statistics drawn by some ingenious doctor, an Italian, I think, which professed to show the relative degrees of jealousy existing in various occupations. According to this authority we were quite at the foot of the list, jealousy being practically non-existent among architects. I trust, and believe, that this is so, and that it may always remain so.

But I would offer a better, and more largely founded, reason for wishing you this work than the desire for your personal welfare. It is to you, the young men, that we look for quick appreciation of new conditions—it is you who carry our hopes for fresh and new renderings of the old facts under those new conditions. Moreover, you are not yet smirched with officialism. So certainly as ever an architect becomes an official, so certainly will he lose his keen sense of his art and rest, as far as maybe, from inventing. There have been many able official architects, and they will, I think, admit to you, if you take them aside, that their life is a weary round of routine and committee meetings, insomuch that design is choked within them, and they repeat contentedly convenient fragments of the past.

*Plan and Elevation.*—I have spoken much on the plan and its foundation, and, you will say, nothing of the elevation. Do not think that I esteem the one as of more or less importance than the other. As the plan develops from the conditions, so the elevation from the plan. Moreover, I am not one to admit that there is more or less art in one than the other. Planning does not reach its end, and you must not rest content with it, when it has disposed of the requirements in commodious fashion. That, certainly, it must do, but much more too. A fine plan is a fine piece of design, and you may no more expect the highest kind of elevation without a plan of equal excellence than you may have a perfect body of flesh upon an imperfect skeleton.

There is plenty of scope for the artist in school planning. That all plans may be entrusted to artists, and that you all may be counted, if not among the school planners, at any rate among the artists, is the best thing I can desire for the good of the Architectural Association.

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The following communication on the subject had been received from Mr. P. A. Robson, and it was read by Mr. H. Tanner, jun.

Mr. Robson said there were two vital points which govern all school planning:—(1) The unit, which is the child; (2) the aspect, or north point. The latter (being easily spoken of, he took it first) simply consists in this northern climate of ours in giving each unit as much sun as possible. Every classroom, except those used for art purposes or science, should receive the sun's rays during some part of the day. With regard to the unit, unless it was duly regarded, the planning must be bad, and therefore the design bad. In elementary National schools the five-seated long desk had been rather a favourite, because at times of entertainments the desks were removed into a class room or rooms, and by sliding a partition a good-sized hall was often available ready-seated. And for the same reasons stepped galleries were avoided. In Board schools dual desks reigned supreme; in higher schools single desks with 18-in. gangways were preferred. Hence we should see that to be an economical planner we must study the unit and the seating first. Personally he thought all these systems bad, and that single desks *arranged dually*, but with, say, a 6-in. gap between, would be far better for all purposes. So we should get an 18-in. gangway, one 2-ft. desk, a 6-in. space, another 2-ft. desk, and then another gangway, etc. Having settled the seating arrangements, it was well to consider annual maintenance:—(1) Number of teachers and "pupil teachers"; (2) size of classrooms; (3) whether a central hall is required. Owing to its excessive cost

outweighing the advantages, the central hall had latterly come rather into disfavour, and a compromise had been made by having a central hall corridor—anything from 12 ft. to 20 ft. wide—which answered all purposes. The Board of Education's latest production in the way of rules) was unfortunately law, and, therefore, had to be noticed, or he should prefer not to; but, as a new edition was, he understood, in the printers' hands, he would but comment on one curiosity in the current issue:—Given a school of 150 with a first floor (*i.e.*, say with seventy children upstairs), there must be two staircases 4 ft. wide per flight, or one staircase for every thirty-five children! Let us trust that the new issue might prove a help and not a hindrance to the proper planning of schools. With regard to Mr. Simpson's remarks about connecting latrines with the school buildings by covered ways, this was surely hardly necessary, and also wasteful of playground space. Moreover, it hardened children to be about in the open air, and had a tendency to decrease consumption, which arises not from hereditary disease but from unsuitable food and want of fresh air. We should be heating the corridor to the latrines next! Also, was it wise to render the school buildings hopelessly at variance with the rough home-life of the average child? In most towns we saw them, after hours in any weather, without coats playing in the streets. It seemed to him that schools must gradually improve as the homes improved, always keeping a little ahead and being an education in themselves, but not an unattainable ideal, as some schools were now, making the child discontented with his home-life. "And, remember, if you sacrifice the proper home-life, you sap the very inmost vitality of England. Do not, therefore, make your schools ridiculously luxurious; rather give them such a thing as a small swimming-bath for a district than cover the ways to the latrines in all the schools in that district. Now a word or two on design. By far the majority of schools all over England have bad elevations. This is not as it should be, and it is for you to remedy. The President of the R.I.B.A. has courageously asked us not to neglect imaginative literature. I venture to suggest that music is even better still as a stimulator to the imaginative faculty. To use the words of a great critic, 'Music, then, not poetry, as is so often supposed, is the true type or measure of consummate art. Therefore, although each art has its incommunicable element, its untranslatable order of impressions, its unique mode of reaching the imaginative reason, yet the arts may be represented as continually struggling after the law or principle of music, to a condition which music alone completely realises; and one of the chief functions of æsthetic criticism, dealing with the concrete productions of art, new or old, is to estimate the degree in which each of these products approaches in this sense to musical law." Let each of us, therefore, try to make our plans right, and it will then be the easier to make our designs "frozen music."

Mr. John Slater, in proposing a vote of thanks, said that he was lost in admiration of Mr. Simpson's courage when he heard that that gentleman was going to read a paper on so large a subject as schools. Mr. Simpson had taken a line which some of them did not expect, but he had given an extensive and interesting *résumé* of the development of schools. He had listened to the paper with a good deal of pleasure, because he could remember some of these National and British schools which had been referred to; in fact, one of his earliest independent jobs was to add a class-room to an old British school, and in another case to make a covered way for the children to the latrines. It was interesting to notice the divergence in Prussia in comparison with our English official ideas as to the arrangement of schools. No one could avoid referring to the Prussian methods in an educational discussion, for the Prussian system was about the best which existed anywhere. Mr. Simpson had quoted Charles Lamb as to what occurred at Christ's Hospital; he (the speaker) had no doubt that some of the members noticed a few years ago a paper or brochure on Eton in the early part of the last century, and if they read that account, and realised what these high-class boarding-schools were in those days, they would wonder that any student who attended them came out alive. The last century witnessed an enormous improvement in the Boarding Schools of the country, but in Prussia, though there were, of course, excellent Boarding Schools, yet they all had a strictly classical curriculum, and there was not the slightest doubt that the reaction against such a curriculum occurred in Prussia very much earlier than it did with us. For any boy with classical tastes and with a bent for literature a classical curriculum would do a great deal of good, and after going through the course he would turn out a cultured man; but there was no doubt that a large number of students wasted their time and got no good from the classical training which used to be the sole one, and they appreciated the fact abroad earlier than we did that the range of learning necessary to make an educated man varied with different times and circumstances, and they very early adopted a system much more like what we are adopting now with regard to their schools. To take one instance—only about two months ago our Board of Education organised a conference, at which both Mr. Simpson and himself were invited to be present, to discuss the question of such institutions as the Royal Institute of British Architects, the Surveyors' Institution, and the medical institutions, recognising and accepting the leaving certificate from some secondary schools as qualifying the man who was studying for architecture, surveying, or medicine, and exempting him from the entrance examinations of those bodies. It seemed incredible that in England (it existed in Scotland) there was no system of leaving certicate at all, but the Prussians as long ago as 1798 instituted the leaving certificate. That showed how carefully the pioneers of education went into the question long ago. Pestalozzi, as everyone knew, was the organiser of elementary education abroad, and there were other names, such as von Humbolt and Schleiermacher, who did the same thing for secondary education. Mr. Simpson had justly said that this Act of 1902, dealing with secondary education, would create a revolution in this country; but to show how slowly we work in this country it might be interesting to state that as long ago as 1876 Matthew Arnold, who was a great educationalist, used these words:—"The intervention of the State becomes especially necessary in superior instruction, because here the body of public opinion, educated enough to discern what it wants, gets smaller than ever." It was curious that, although such words could be written by one of our best educationalists so long ago, we should have to wait so long to get the change he advocated. As to constructional details, he agreed with Mr. Simpson that it was necessary not to make any formula a fetish; but as to left-hand lighting, he could not agree with the lecturer. He believed that the left-hand system was the best for the students, and that there was not much in Mr. Simpson's criticisms on that head. But he agreed with Mr. Simpson as to the height of class-rooms and school-rooms. There was too great a tendency to make class-rooms more lofty than there was any necessity for. No matter how lofty a class-room might be made, if it was crowded with children, some mechanical means must be adopted for moving the air, for the greater height would not prevent the air becoming stagnant. He had been glad to hear the remarks about naked utility, for he was sure that in a school it was a great thing to have the main hall beautiful in order to educate the children. Although he did not like to differ from such an authority as Mr. Robson, he could not help wondering, when he heard Mr. Robson's remarks, whether Mr. Robson knew that in the case of a good many children they had no home at all. How could one hope to educate those children and beautify their lives if the school-rooms were kept in a state of naked utility?

Mr. J. Osborne Smith, in seconding the vote of thanks, said the paper was rather like one they might expect at the opening of a congress on schools; it was full of suggestions, none of which, however, were fully thought out or dealt with in a critical way. But he thought this was the proper time for such a paper, for we were in a state of transition about everything in regard to schools, and this was just the sort of paper to discuss amongst themselves. He believed that the authorities were beginning to see that it was unwise to work on too hard and fast lines, and that in the future, so far as the Board of Education was concerned, the rules would be more elastic than hitherto, very much to the benefit of schools and those who had to work in them. Much in the future of school planning depended on the methods adopted in the teaching, and these methods, too, were in a state of transition. Mr. Slater's illustration as to higher schools and the classical curriculum applied also to the lower schools. There were a great many children taught in the lower grade schools to whom the semi-literary form of education they received was no good at all, and the time so taken up would be much better employed in teaching those children technical subjects in technical schools. In time order would come out of chaos, and architects' plans of schools would be altered accordingly. There was one thing, however, which he hoped would not be altered. We have been gradually getting free of those dull, dreary, not to say unhealthy, schools which Mr. Simpson had referred to in his retrospect, but Mr. Simpson seemed to suggest that the lower-grade classes could be made larger. He would be sorry to see a step of that kind taken. Let them make their classes smaller and teach the children more thoroughly. That was the present tendency, and he hoped it would continue. He was glad we were likely to have a very sympathetic head of the Architects' Department of the Board of Education. He was sure that Mr. Clay would study every matter on its merits, and would look at it from a sound and healthy point of view, not from the point of view of "official red-tapeism." It was a very important thing to get cheerful and healthy schools. There was a tendency now to make the windows much too large. He had just built an addition to a school under the new Act, and when he went in it the other day he was startled at the amount of light. That meant so much more chilling surface, which was very objectionable in the case of children who sat near the windows. There was bound to be a chilling down-draught in such weather as we have been having. We should get an aspect for our schools which gave the largest amount of sun for the class-rooms. He remembered the time when they were told a north-east light was the best for class-rooms, but in modern plans the point was dealt with very satisfactorily. On the cold side was the staircase and the cookery-rooms perhaps, but the class-rooms were placed where they got the sun. As to the plan by the late Professor Roger Smith, to which such pleasing references had been made in Mr. Clay's book and by others, it was the right plan for secondary schools at the present day, and many of the best schools were based upon it, although at first it was put on one side. The corridor plan for some form of teaching answered its purpose when cost was a consideration and they could not afford a hall, but he preferred a hall, though not as he had seen it arranged, with class-rooms surrounding it, especially on the upper floors, so that some of the rooms had no direct sunlight. As to the position of pupils in relation to the windows, that reminded him of what he once saw in a class-room of a secondary school, *i.e.*, the pupils sitting, as a regular thing, with their backs to the master. He did not believe that was at all a usual thing. He was bound to agree with Mr. Slater as to left-hand lighting, although in a number of schools there were rooms that did not need the left-hand light; but in ordinary class-rooms he had never been able to convince himself that it was right to dispense with left-hand light, although he knew it was advocated. He agreed with Mr. Simpson as to the value of a properly regulated system of education, and that in time schools would be provided with the luxuries he mentioned, *i.e.*, museums, workshops, gymnasiums, etc. Literary instruction for some children was a mistake; it was far better to turn those children into the chemical, science, or technical rooms; the children were delighted and were far better educated as a result. In time we should have our schools furnished with libraries, workshops, cutting-out rooms, studios for drawing and modelling, rooms for music, and all such things. Where the money would come from he did not know, but it would come.

Mr. Millard said the paper they had heard was a useful one apart altogether from the points as to school planning. The doctrine of the growth of plan from the use to which a building is devoted, applied to more buildings than schools. Mr. Simpson said that no new development would be attained in school design without a thorough knowledge of the conditions on which the problem was based. Each building that an architect had to design meant for him a solution of a problem, and it was essential for the right solution of a problem that it should be quite clearly stated. All the conditions should be present to the architect's mind, so that he could state the problem quite clearly to

himself and then proceed to solve it; to start with some pre-conceived notion of his own, or somebody else's, and to try to make the conditions work in with this, was to put the cart before the horse. Mr. Simpson had said that repairs could be left to the surveyors rather than to architects. That was a distinction which he did not quite relish. Could not the architect act in the capacity of surveyor in regard to repairs and up-keep of buildings? Would he be much of an architect if not capable of doing so? The building rules of the Board of Education which had hitherto been in existence, and which had to be worked to, professed to tell an architect how to build well, but he was glad to hear that they were being revised, for rules which purported to do that ought to be above question, and ought not to be open to the suspicion of having the trail of the amateur over them—the influence of the high-placed non-expert over-ruling experts. The quotation in the paper from Mr. Wells reminded him of a visit the Association paid to Harrow School last summer and of the Art School there. It was a revelation to him to see how Mr. Hine treated his pupils, *i.e.*, as separate units, and not in the lump. Each man was trained to do his individual best. Was not this a hint for an architectural school? Let them beware of accomplishing all they desired their school to become merely by a set curriculum. Mr. Simpson had kept to principles, and he did not deal with the latest modern work. But, he could not help being reminded of one of Mr. Simpson's own works—a large school on the cliffs between Brighton and Rottingdean, which appealed to him very much. He felt it had been erected by an architect who began at the beginning by modelling his building on the site and uniting it to the site. Mr. Simpson said that young men were needed. It might be so; then they must be young men with old heads if such problems as Mr. Simpson foreshadowed were to be thoroughly grasped and truly solved; the newest and most brilliant ideas would of themselves go a very little way without experience and the capacity to profit by experience, and this could not come in a flash. The architects must be made as well as born. To the making of him there went various ingredients, and in him must be found certain qualities indispensable to success; power to grasp, wisdom to foresee, imagination to initiate, and firmness to decide.

The Chairman, in putting the vote of thanks, said that the paper was an extremely valuable one. In regard to what Mr. Simpson said as to the rules of the Board of Education for regulating the design of schools, and his plea for making them more elastic and administering them with a little more intelligence, he hoped that Mr. Simpson's plea would bear fruit. There was always a tendency in Government departments to gravitate towards hard and fast rules, and he supposed that was because the more hard and fast they were the less intelligence was required in administering them. If you could only arrive at a state of affairs in which every case would be intelligently considered on its own merits without being affected by cast-iron rules, that would be a most desirable state of affairs, and he hoped that that would come to pass. Mr. Simpson's remarks as to economy, and as to the possibility of getting design into our school buildings and making them to some extent beautiful, they must all agree with. What Mr. Simpson said as to the height of rooms appealed to him very much. Much more economy might be effected if the height of buildings was reduced. Some existing rules as to height and other details of the kind were ridiculous. It was absurd to have a class-room of moderate size 15 ft. high. It was no use to any one; the saving which would be effected by those ridiculous rules being altered would compensate ten times over for any little elaboration one might introduce in the building. What, he supposed, Mr. Simpson meant in his reference to larger classes was that the more elementary the teaching the larger the class might be, and that, if such classes could be increased, it might be possible to decrease correspondingly the size of the rooms where the teaching was more advanced without any increase in cost.

The vote of thanks having been heartily agreed to,

Mr. Simpson, in the course of a brief reply, said that in bringing such a paper before them his idea was this: it was unnecessary to select plans from different buildings—little tips as to the best way to do this and that—to put before a purely technical body. That was done for them in the building papers and in the text-books. What was important, and especially important for a body of young men, was that they should be induced, if possible, to think out the principles which govern their design, and it was more to that side of the question that he had addressed himself than to the finished and worked-out problem. As to what had been said about left-hand light, there seemed to be some misapprehension as to his remarks. He had no intention of deprecating left-hand lighting, for he was fully aware of its great importance. The objection he ventured to raise was as to its being made into a kind of fetish. In modern competitions for schools he would be a brave man who ventured to show a class-room which was not left-hand lighted, but there were many cases in infant schools where left-hand lighting was not necessary. He cordially supported what Mr. Osborne Smith had said as to the importance of sunny class-rooms.

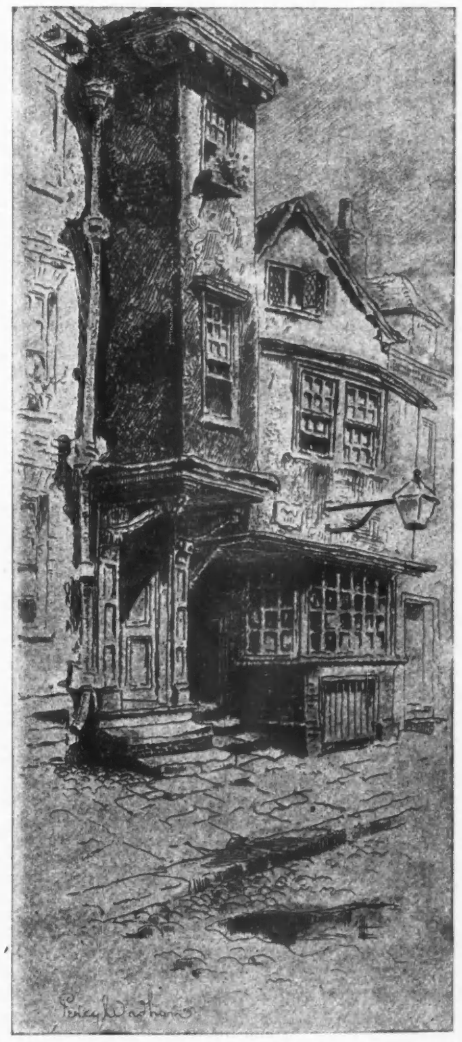
The Chairman announced that the next meeting will be held on April 8, when Mr. W. Gilbert will read a paper on "Craftsmanship."

The meeting then terminated.

## OLD HOUSES, CHURCH-STREET, WINDSOR.

THIS illustration of some old houses at Windsor, recently demolished, is from an etching by Mr. J. Percy Wadham, whose drawing of the old well at Villeneuve-les-Avignon forms one of the illustration plates in this number.

The house with the projecting bay used to be called "Nell Gwynne's house," but we do not know that there was anything beyond a vague tradition to connect it with that rather unfortunate person. The houses stood on the



*Old Houses, Church Street, Windsor. From an etching by Mr. Percy Wadham.*

Castle side of the street, and it is said that they were formerly occupied by ladies and gentlemen in attendance on the Court, and a subterranean passage connected them with the Castle; this was closed about the middle of last century.

A year or two back the local authorities expressed their intention to pull down these old houses in order to erect a drill hall. A strong protest was made at the time, but to no purpose; the houses were demolished, though only to leave an empty space, as the drill hall scheme fell through.

## THE ARCHITECTS' BENEVOLENT SOCIETY.

THE annual general meeting of the subscribers and donors of the Architects' Benevolent Society was held at No. 9, Conduit-street, Regent-street, W., on Thursday evening last week, Mr. Aston Webb, R.A., President, in the chair.

The minutes of the last meeting having been read and confirmed, Mr. Percivall Currey, Hon. Secretary, read the fifty-third annual report, which stated that the work of the Society has been well maintained in spite of many adverse circumstances. The Society has had during the past year a small increase in its subscriptions, but it has also had a corresponding drain upon its resources, so that at the end of the year the Treasurer has only a small balance in hand. The claims that have been made upon the Society during the past year have been very urgent, and in some cases from architects who were formerly in good practice, but who, through sickness or other causes, have found themselves unable to continue their work.

"The Council have to regret the loss through death of the following subscribers:—Mr. J. F. Wadmore, Mr. Francis Edwards, Mr. Herbert Ford, Mr. Henry Saxon Snell, and Professor T. Roger Smith. The total amount of subscriptions received during the past year is 554*l.* 16s., and the pensions and grants amounted to 830*l.* 2s. 6d. The following gentlemen retire by rotation from the Council:—Mr. Sydney Smirke, Mr. H. L. Florence, Mr. Graham C. Awdry, Mr. J. T. Christopher, and Mr. F. T. Baggallay. To fill the vacancies caused by these retirements the Council desire to nominate Mr. T. E. Collcutt, Mr. Rowland Plumbe, Mr. G. T. Hine, Mr. Wm. Grellier, and Mr. Ambrose Poynter. The balance-sheet and income account for the year ended December 31, 1903, audited by Mr. Henry A. Hunt and Mr. Edmund Buckle, are submitted. The sincere thanks of the Society are due to the Council of the R.I.B.A. for the use of their rooms, and Mr. Locke and the other officials have rendered material assistance which is cordially appreciated. Donations have been received from the following gentlemen:—Mr. Graham C. Awdry, 25*l.* 10s.; Mr. F. T. Baggallay, 10*l.* 10s.; Mr. John T. Christopher, 5*l.* 5s.; Mr. Percivall Currey, 5*l.* 5s.; Mr. Ambrose Poynter, 5*l.*; the Tylers and Bricklayers' Co., 5*l.* 5s.; Mr. H. Walter Lonsdale, 5*l.* 5s.; Nottingham Architectural Society, 5*l.* 5s.; Mr. Aston Webb, R.A., 5*l.*; Mr. F. W. Tasker, 5*l.* 5s.; Mr. H. Cheston, 5*l.* 5s.; and Mr. David Morgan, 5*l.* 5s., &c."

The Chairman, in moving the adoption of the report and balance-sheet, said the cost of working the Society hardly came to 12 per cent. of the receipts, which, for the amount that was subscribed, was very small indeed, and thanks were due to those who managed the affairs of the Society so economically. The members of the Institute number 1,830, and out of that number he was sorry to say there were only 350 who subscribed to the funds of the Society, while the architects practising in the country numbered between four and five thousand. This Society was not an Institute matter solely; it was a benevolent society for all architects, and it helped all architects who were in need, independently of their opinions or of any society they might belong to. He thought it would be agreed by all architects that there were two matters in connexion with the profession in which they all might join, whatever their opinions and feelings. One was in the education of the young, and the other in assisting the aged, the infirm, and the unfortunate. The stock-in-trade of an architect was a small one—his brain to think with and his hand to work with, and if one or the other went wrong he was at once plunged into difficulties and embarrassment. The subscriptions had increased during the year by something like 50*l.*, which was a very good and encouraging fact; but, on the other hand, the donations were the smallest for many years past, *i.e.*, 96*l.* 12s. He understood that there was a legacy of 100*l.* thoughtfully left by the late Mr. Saxon Snell, but so far they had had no official intimation of it. There had been fifty applicants relieved during the year, and they had haled from Dublin to South Africa, so that all shared in the benefits of the Society, and for that reason he thought they had a right in asking them to support the Society. Sixty per cent. of the

applicants came from the provinces, but the supporters of the Society were nearly all from London, and even in London there were many well-known names not on the list of subscribers. He thought they should all help in the work the Society was doing, so that more might be done to help those who were unfortunate and in distress. He thought it would be well if architects generally would take less notice of begging letters and appeals, which were extremely painful to deal with, and instead were to increase their subscriptions or commence to subscribe to the funds of the Society, where every case was looked into carefully and assisted according to its merits.

The motion having been agreed to, Mr. H. H. Collins moved a vote of thanks to the retiring members of Council. It ought to be brought home to provincial architects that they should do more to help the Society, seeing how good a work the Society was doing. In a sense he was glad that the balance in hand was only 15*l.*, for that made it an absolute duty on those who had means to help augment that balance.

Mr. A. Style seconded, and the motion was agreed to.

Mr. J. Macvicar Anderson then moved that the following gentlemen be elected as members of Council for the ensuing year, *i.e.*, the President, the President of the R.I.B.A., and Messrs. J. J. Burnet, J. H. Christian, R. St. A. Roumieu, G. Scamell, E. A. Gruning, Edwin T. Hall, Lewis Solomon, Wm. Woodward, H. H. Collins, E. T. Collcutt, G. T. Hine, Wm. Grellier, Rowland Plumbe, and Ambrose Poynter. If the Council, he said, could, during their year of office, induce a larger number of architects to subscribe and take part in the work of the Society, they would be doing a very good work.

Mr. M. Watson seconded, and the motion was agreed to.

Mr. H. L. Florence moved a vote of thanks to Mr. W. Hilton Nash for his services as treasurer, and that he be re-elected in that capacity. He also moved to the same effect in the case of Mr. Percivall Currey, the Hon. Secretary.

Mr. H. Lovegrove seconded. Fifteen pounds was a very small sum for the Treasurer of the Architects' Benevolent Society to hold, and he thought that it ought to be possible to get more architects to take an interest in the Society. Last year he suggested a dinner, but the proposal did not seem to find favour.

The motions were heartily agreed to.

Mr. Nash said that only one-sixth of the members of the Institute helped the Society, and there were only about one-fourteenth of the architects of the country who subscribed. That proportion was too small.

Mr. Currey, in replying, referred to the great assistance they received from Mr. Dirks, the Secretary.

On the motion of Mr. Nash, seconded by Mr. Scamell, a vote of thanks was accorded to the retiring auditors, Messrs. E. Buckle and H. Hunt, and Messrs. Hunt and J. Christopher were elected auditors for the ensuing year.

On the motion of Mr. R. St. A. Roumieu, seconded by Mr. Currey, a vote of thanks was accorded to the Institute for the use of their premises, and on the motion of Mr. J. D. Crace a hearty vote of thanks was passed to the Chairman.

Mr. Webb replied, and the meeting terminated.

## CARPENTERS' HALL LECTURES:

### ARCHITECTURAL DEVELOPMENT DURING THE XIXTH CENTURY.

THE fourth of the present series of lectures on matters connected with building, arranged by the Carpenters' Company, took place in their Hall on Thursday evening last week, when Professor F. M. Simpson delivered an interesting lecture on "Architectural Development during the XIXth Century." The Rt. Hon. Lord Reay presided.

Professor Simpson said that in the course of the hundred years now under discussion more changes took place than during the previous four centuries. The first thing to determine was, why did architecture during this period proceed on lines so different from those which had prevailed previously? The key to the solution is found in the unsettled state of affairs at the end of the previous century, due to the great French Revolution. Up to that time the secrets of the crafts of architecture, painting, and sculpture had been passed on from father to son for generation after generation, but the French Revolution and the changes it effected destroyed these traditions. But the end of the XVIIIth century was not only an age of revolution; it was also an age of artistic—or perhaps a better word would be archæological—revivals, and revivals not only in architecture, but also in painting and sculpture. The architecture of the XIXth century might be roughly divided into two periods: the first, from 1800 to about 1860, was the age of revivals; the second, from 1860 to the end of the century, was the age of experiments. In the former period there were two revivals, which ran concurrently, *i.e.*, the Greek revival and the Gothic. The architectural world, including both practitioners and patrons, was divided into two hostile camps. All were classical or mediæval; no compromise was possible. The classical revival had commenced some years before the century opened, chiefly owing to the enthusiastic investigations into the principles of Greek art by Stuart and Revett and others, supported by the powerful Dilettante Society. Additional impetus was given to the movement by the importation to England by Lord Elgin in 1816 of the sculpture from frieze and pediment of the Parthenon at Athens.

As to the Gothic revival the lecturer referred to Horace Walpole's villa at Strawberry Hill, in which the spirit of Gothic was absent. The flame of the Gothic movement was fanned by the novels of Sir Walter Scott, and many pretty fancies followed its revival, but the result was that for a time XIXth century buildings were made to masquerade in mediæval garb. This was the state of architecture in the first half of the last century: the romantic and the classical schools were at loggerheads one with the other, and it is difficult for us now to understand with what bitterness the war of the styles was waged. Professor Cockerell was the captain of the classic camp, and Augustus Welby Pugin was leader of the Gothic, and two men more different it would be difficult to imagine. Cockerell was a man of intense refinement, exquisite taste, and considerable knowledge; his manner was polished as his work—a courtly gentleman, he was no match in a war of words for his fiery and outspoken opponent, who, a genius who died at the age of forty, owed much of his versatility and impetuosity to his forebears, who were French. Both men were enthusiasts and both were mistaken. The English of the XIXth century could no more return to mediævalism than it could return to the glories of Greece. Besides Cockerell, the classic camp included Sir John Soane, John Nash, Wilkins, Sir Robert Smirke, and Sir William Tite. One building which belonged to the period and which specially deserved mention as being universally regarded as the most successful of its kind in England, if not in Europe, was St. George's Hall, Liverpool, won by Elmes in competition.

As to the Gothic revival, in the early days of the century Britton commenced the publication of his "Architectural Antiquities" and "Cathedral Antiquities of England," both works having considerable influence. Britton was followed by Rickman in his "Introduction to Gothic Architecture," while there were other writers who expressed the same views. Pugin threw down the gauntlet by comparing the work of the Middle Ages with what he called the pagan method of his own time, and his two main principles were sound ones. The first was that there should be no features about a building which were not necessary for its convenience, construction, and propriety; and the second was that all ornament should consist of enrichment of the essential construction of a building; and he further stated that there were many objects of ordinary use which were rendered ridiculous because the artist, instead of seeking the most convenient form and decorating it perpetrated some extravagance. It was as necessary to preach that now as then. Pugin was not always able to practise what he preached, but that was not his fault. He was not to blame because ornament was cast in plaster, instead of being executed in stone, nor for the shams which mar so many early examples of the revived style. In one little work he had his own way entirely, *i.e.*, in the Roman Catholic Chapel at Ramsgate, which remains, a monument of the Gothic feeling which he undoubtedly possessed and of the painstaking care he was always ready to take. A much larger work in which he assisted was the Houses of Parliament, which, as he said, had Tudor details on a classic body, and it must be granted that the building is pretty warmly clad. The Houses of Parliament and St. George's Hall showed clearly the absence of a recognised style of architecture at the commencement of the late Queen's reign; the two works were commenced at exactly the same time and were monuments of two styles.

After 1860 appeared another body of men who designed on somewhat different lines, but before considering them he would refer to the Great Exhibition of 1851. From the illustrated catalogue of the Exhibition it was easy to see how atrocious almost all the exhibited designs in the crafts were, and the Exhibition brought this fact home to the people, and that was the great good it did. The revival of artistic handicraft dated from this period. The Exhibition brought to the front the big manufacturers and middlemen who understood the art of buying and selling and the art of advertising, but who did not appreciate or understand the art of design. The great advance which has recently taken place in industries, and which is one of the most pleasing facts of the present time, is largely due to the fact that artists have once more emancipated themselves. One can now buy direct from the craftsman who designs and makes the wares he sells, and William Morris was probably the first to lead the way in the right direction. Vulgar things, it was true, could still be bought in vulgar shops which, he was sorry to say, were sometimes shops to which the designation "best" was applied. John Ruskin had a good deal to say about the Exhibition, but chiefly in opposition to it. As a writer of beautiful prose, Ruskin would always be held in high esteem by the general public and others, and his writings had had considerable effect on those who appreciate good art, though it was somewhat doubtful if they had had very much effect on those who produce it. Ruskin felt strongly the beauties of Gothic architecture, and he expressed his feelings in beautiful language, though he often overstated his case, showed an intolerance of architectural works of periods other than the Middle Ages, and contradicted himself with a freedom which was bewildering.

As to the architectural work of the second half of the century, there was a marked change. Pugin and his contemporaries had followed as closely as the limitations imposed on them permitted the English Gothic of the XVth century, but in the work now to be considered other forms were developed, and not all of them English. The increasing facilities for foreign travel had brought the Continent within reach of everyone, and foreign idioms crept in. Sir G. Scott got much of his inspiration of English Gothic from the XIIIth and XIVth centuries and took many of his ideas from French work, and other architects followed suit. Most of Scott's churches were of stone; the fine brick churches of London and elsewhere were of a later date and by other men, notably Butterfield, James Brooks, and others. Scott would be chiefly remembered as the central figure of the restoration movement which, started by the Cambridge Camden Society and backed up by the whole army of ecclesiastics, swept over the land in the sixties and seventies. A clean sweep was made of everything that was not Gothic, and the result was that an unrestored church was as difficult to find now as an unspoilt watering-place. Before the craze set in, churches were full of the work of all ages, every stone telling a story, and the history of England was written in and about these old buildings. The restorations of the XIXth century ruthlessly destroyed this history. The problem was no doubt a difficult one; to have allowed these old buildings to fall would have been an act of vandalism, and the wave of Gothic enthusiasm was too strong for half measures. In the case of the cathedrals and large churches, it was difficult to see how the restorationists could have acted otherwise than they did, but some of the parish churches might surely have been preserved without the elaborate schemes of restoration to which they were subjected. The money spent would have been better used in building new churches alongside the old ones and allowing the old buildings to remain as historical monuments, a little judicious attention preventing them from further decay.

From 1875 to the end of the century many churches were erected by Street, Butterfield, Burges, Pearson, Sedding, Mr. Bodley, and others which might fairly compare with the best examples of the Middle Ages. Street's great work, of course, was the Law Courts, in which he tried the impossible. This building, probably more than any other, showed the futility of employing Gothic for public buildings, and it might be termed the last great effort in the style.

The last quarter of the century was chiefly remarkable for the enormous advance which took place in the designing of private houses. The work of Mr. Norman Shaw and Mr. Philip Webb had an immediate effect on both domestic and street architecture. Before their erection stucco and Welsh slates had been supreme for private houses, but they gave way to red brick and tiles. The new style was promptly christened Queen Anne, and it had its affectations, but the style was a sound one and produced some excellent results, combined with some strange vagaries. The names of some first-rate living architects were not known as well as the names of living painters of even second or third rate rank, for people rarely looked at a picture without asking who painted it, but when they saw a beautiful building they rarely did more than inquire who lived in it or what it was for. Following the Queen Anne movement was a Continental invasion. Architects crossed the Channel and sketched interesting bits which they worked into their designs, and sketch-book architecture became the rage for a short time, but level-headed Englishmen after a while resented the intrusion of these undigested fragments. The chief fault of the Queen Anne movement had been a craving after the picturesque, and this was carried to a still further extreme by the sketch-book men. In time, however, the old adage that true picturesqueness lay in simplicity reasserted itself and buildings became plainer, architects relying more on proportion and less on ornamentation. Carving, where used at all, was not allowed to straggle all over the façade, but was massed in one or two places where it was desired. The sculpture and carving work was entrusted to artists and not to firms, and sculptors and architects worked once more in sympathy A more chastened version of classical architecture than the Queen Anne had now replaced that style, but how long the present movement would continue it was impossible to say. So many changes had taken place, so many phases of art had been attempted in the last century that no one could say how long it would last, but the chances were in its favour, and the style was adaptable. Correctness of detail was not insisted upon as in the case of the Greek or the classic revival: its fetters hung loosely on the designer and did not cripple his individuality. The great difference between work done now and that of a century ago was the variety in the present-day work. Utilitarian buildings one hundred years ago were frankly plain; now, fortunately, architectural expression was required in addition. The large hotels, the schools, private, public, and technical, the municipal buildings, the blocks of city offices, the big flats, etc., all required special planning and individual expression, and it was this that now made an architect's work so complicated and yet so fascinating. It was because of this that failure was so frequent and success so rare. Each separate building had to be planned, designed, originated afresh. From the observation of the various necessities of planning and from the proper expression given to each type would spring sooner or later a recognised architectural style—a style in which architects, sculptors, painters, and craftsmen, would work together in harmony. He said "sooner or later," but he thought he could go further and say that it is now springing up. Without some such uniformity of ideal advance in architecture was impossible. Art was like a State—it could not advance in the midst of civil war; but those who demand a new architectural style in honour of a new century ask for the impossible. There never had been such a thing as a new style; styles had always been evolved out of preceding ones, and the evolution had been so slow that it was impossible to say where one began and the other ended. To have an absolutely new architectural style we should have to have new buildings materials, new methods of construction, new requirements, a new climate, new conditions, and, in fact, a new earth.

Professor Simpson then showed a large number of interesting lantern slides to illustrate his remarks.

The Chairman proposed a hearty vote of thanks to the lecturer, remarking that he had induced the Council of University College to reorganise the scheme of architectural education altogether, and that important reform had been placed in the hands of Professor Simpson.

The vote of thanks was heartily agreed to, as well as a vote of thanks to the Chairman for presiding.

## THE ASSOCIATION OF MANAGERS OF SEWAGE DISPOSAL WORKS:

### THE SEWAGE PROBLEM.

A MEETING of this Association was held on Saturday afternoon last in the Library of the Sanitary Institute, Margaret-street, W., when Mr. W. D. Scott-Moncrieff delivered a presidential address entitled, "The Year's Progress in the Solution of the Sewage Problem."

The lecturer first quoted from a contemporary a review of sanitary engineering in 1903, after which he remarked that the first impression obtained from this long list of works in progress must be a recognition of the fact that, however Great Britain may be falling behind in other departments, we are still maintaining our position as the pioneers of sanitation. But, although it was flattering that other nations should look to us for light and leading upon all matters connected with public health, it was well known to all practical managers of sewage works that these great undertakings were being carried out from many different standpoints, and that their design was not connected by a common standard or by generally accepted formulæ of any kind. Things were all sixes and sevens, and a great Government department was sheltering itself behind a Royal Commission which had been sitting for about five years without even giving an expression of opinion upon the main issue they were to report upon. Yet it would be difficult to find a reference drawn more concisely than the one with which the Royal Commission had to deal. It was as follows:—

(1) What method or methods of treating and disposing of sewage (including any liquid from any factory or manufacturing process) may properly be adopted, consistently with due regard for the requirements of the existing law, for the protection of the public health, and for the economical and efficient discharge of the duties of local authorities.

(2) If more than one method be adopted, by what rules, in relation to the nature or volume of sewage or the population to be served or other varying circumstances or requirements, should the particular method of treatment and disposal to be adopted be determined; and to make any recommendations which may be deemed desirable with reference to the treatment and disposal of sewage.

This was the reference upon which the Royal Commission had been sitting for five years, and so far as regards the main issue they had gone no further than to say that certain methods, which were described in no detail, might be adopted with certain precautions which were not described at all. If it had never been appointed the hands of the Local Government Board would have been forced long ago. Public opinion would have expressed itself so strongly, and the department would have been so pestered by deputations, that it must either have proclaimed its incompetence on the house tops or have adopted a consecutive and rational policy of some kind. If the Royal Commission had proved competent for the work they had undertaken it would have been different, but as matters stand it might safely be said that the contributions of the Royal Commission towards the practical solution of the sewage problem so far as the public was concerned had been a blank. The four interim reports they had issued might very well have been produced by a departmental committee of the Local Government Board without committing them in any way.

Having referred to the methods of sewage disposal in Glasgow and Birmingham, the author said:—"Now in taking the case of these great cities—one still deliberately adopting a process at great expense which the other has absolutely abandoned, and effecting a great economy in doing so—it is important not to be led into any wrong conclusion. That the question is one of great importance to other communities, and that it amounts not only to a difference in degree but in kind is quite certain. The Corporation of Glasgow and the Birmingham, Tame, and Rea Drainage Board both acted under the advice of their expert, and it is difficult to believe that both of them can be right except under one supposition, namely, that the sewage of the two cities differs so materially that what was good for one did not apply to the other, and that each has been justified in carrying out their own works in their own way. Now this point is the crux of the whole question, and in speaking of the year's progress we may spend our time to some purpose in trying to investigate this contradiction. You will all agree with me that if the existing state of knowledge is so inchoate as to preclude the possibility of arriving at a sound conclusion, then the sooner that progress goes on the lines of more accurate knowledge the better for all concerned. We will presume that the scientific advisers of the Corporation of Glasgow were fully acquainted with the advantages to be obtained from the liquefying action of hydrolysing tanks, but that they believed there were good reasons for not adopting them. It could not be that the Glasgow sewage was not capable of undergoing a putrefactive fermentation, because it is common knowledge that it does, and the only reason that one can think of as pointing to the use of chemical deposition is the old tradition that the organic matter in solution from a hydrolysed sewage is in excess of the capacity of any bacterial filter to deal with. In other words, they are spending money for chemicals upon a supposition which has been entirely disproved in the case of Birmingham. We are thus, I think, forced to the conclusion that the Glasgow scheme, involving a vast sum of money which is being saved at Birmingham, was adopted under advice which has been repudiated with the best results."

This was the sort of thing that was going on all over the country, while the Royal Commission was looking on as though it were an entirely disinterested spectator. It was obvious that all the works referred to, involving a gigantic sum of money collected from the rates, were being carried on in a haphazard way, unguided by any scientific knowledge that was worth the name. The methods now being employed were empirical from start to finish, and the mistakes that were being made, involving as they did an almost incalculable waste of money and efforts, were the result of blank ignorance as to the conditions that were essential in order to obtain economical success. The extraordinary feature of the situation was that no one—no chemist, no engineer, no expert of any kind—had taken the trouble to find out what the necessary conditions really were by any kind of standard that was capable of comparing one sewage with another in terms of the measured condition required to produce any standard of purity in an effluent. If the Corporation were to question their scientific advisers upon these essential points not one of them would be able to give an answer—a really scientific basis of any kind—and this being so one need hardly be astonished at the absence of any progress upon scientific lines. These remarks did not apply in the case of Birmingham, where a successful solution of the problem was being rapidly achieved by simply complying with the conditions which nature absolutely insists upon before becoming the servant of man. It was all nonsense about organic matter in solution in well hydrolysed sewage being ever in excess of a properly constructed bacterial filter to deal with. Those who maintained the contrary would have to produce a quite exceptional sewage in order to prove their point, because in a well aerated filter as much as twenty-nine parts per 100,000 of nitric nitrogen had been obtained from a hydrolysed sewage, proving a capacity for nitrification by the bacterial process which was far in excess of anything that could be required in the case of a town sewage like that of Glasgow. In regard to much smaller communities than Glasgow and Birmingham there was the same absence of any recognised basis to work upon, and the author described the procedure of a small town in regard to the disposal of its sewage in order to illustrate what was being done. Proceeding, he said:—"In connexion with the year's progress suggestion made in my last year's address has already borne fruit. The passage is as follows:—

"'After having been in the grit chamber long enough to allow of the deposition of the detritus and in the anaërobic tank long enough to hydrolyse the organic matter, the raw incoming sewage should be diverted to a second set of grit chambers and tanks, and the liquid which has been longest in the anaërobic tank should then be circulated so as to pass again through the first grit chamber so as to complete the hydrolysis of the suspended organic matter, which will otherwise appear as sludge.'

"I predicted that the adoption of my suggestion was only a question of time, and this has been fulfilled. The suggestion has been carried out in a provisional manner by the engineer of one of the largest sewage works in the country, and has given most surprising and satisfactory results. It now appears that there is every prospect of being able to confine the difficulty of dealing with sludge to little more than the mineral detritus carried down by the sewers, which is inoffensive and easily dealt with. Moreover, it has been discovered that the deposit from open hydrolysing tanks which have been in constant use and undisturbed for four years, after being discharged over the surface

applicants came from the provinces, but the supporters of the Society were nearly all from London, and even in London there were many well-known names not on the list of subscribers. He thought they should all help in the work the Society was doing, so that more might be done to help those who were unfortunate and in distress. He thought it would be well if architects generally would take less notice of begging letters and appeals, which were extremely painful to deal with, and instead were to increase their subscriptions or commence to subscribe to the funds of the Society, where every case was looked into carefully and assisted according to its merits.

The motion having been agreed to, Mr. H. H. Collins moved a vote of thanks to the retiring members of Council. It ought to be brought home to provincial architects that they should do more to help the Society, seeing how good a work the Society was doing. In a sense he was glad that the balance in hand was only 15*l.*, for that made it an absolute duty on those who had means to help augment that balance.

Mr. A. Style seconded, and the motion was agreed to.

Mr. J. Macvicar Anderson then moved that the following gentlemen be elected as members of Council for the ensuing year, *i.e.*, the President, the President of the R.I.B.A., and Messrs. J. J. Burnet, J. H. Christian, R. St. A. Roumieu, G. Scamell, E. A. Gruning, Edwin T. Hall, Lewis Solomon, Wm. Woodward, H. H. Collins, E. T. Collcutt, G. T. Hine, Wm. Grellier, Rowland Plumbe, and Ambrose Poynter. If the Council, he said, could, during their year of office, induce a larger number of architects to subscribe and take part in the work of the Society, they would be doing a very good work.

Mr. M. Watson seconded, and the motion was agreed to.

Mr. H. L. Florence moved a vote of thanks to Mr. W. Hilton Nash for his services as treasurer, and that he be re-elected in that capacity. He also moved to the same effect in the case of Mr. Percivall Currey, the Hon. Secretary.

Mr. H. Lovegrove seconded. Fifteen pounds was a very small sum for the Treasurer of the Architects' Benevolent Society to hold, and he thought that it ought to be possible to get more architects to take an interest in the Society. Last year he suggested a dinner, but the proposal did not seem to find favour.

The motions were heartily agreed to.

Mr. Nash said that only one-sixth of the members of the Institute helped the Society, and there were only about one-fourteenth of the architects of the country who subscribed. That proportion was too small.

Mr. Currey, in replying, referred to the great assistance they received from Mr. Dirks, the Secretary.

On the motion of Mr. Nash, seconded by Mr. Scamell, a vote of thanks was accorded to the retiring auditors, Messrs. E. Buckle and H. Hunt, and Messrs. Hunt and J. Christopher were elected auditors for the ensuing year.

On the motion of Mr. R. St. A. Roumieu, seconded by Mr. Currey, a vote of thanks was accorded to the Institute for the use of their premises, and on the motion of Mr. J. D. Crace a hearty vote of thanks was passed to the Chairman.

Mr. Webb replied, and the meeting terminated.

## CARPENTERS' HALL LECTURES:

### ARCHITECTURAL DEVELOPMENT DURING THE XIXTH CENTURY.

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Professor Simpson said that in the course of the hundred years now under discussion more changes took place than during the previous four centuries. The first thing to determine was, why did architecture during this period proceed on lines so different from those which had prevailed previously? The key to the solution is found in the unsettled state of affairs at the end of the previous century, due to the great French Revolution. Up to that time the secrets of the crafts of architecture, painting, and sculpture had been passed on from father to son for generation after generation, but the French Revolution and the changes it effected destroyed these traditions. But the end of the XVIIIth century was not only an age of revolution; it was also an age of artistic—or perhaps a better word would be archæological—revivals, and revivals not only in architecture, but also in painting and sculpture. The architecture of the XIXth century might be roughly divided into two periods: the first, from 1800 to about 1860, was the age of revivals; the second, from 1860 to the end of the century, was the age of experiments. In the former period there were two revivals, which ran concurrently, *i.e.*, the Greek revival and the Gothic. The architectural world, including both practitioners and patrons, was divided into two hostile camps. All were classical or mediæval; no compromise was possible. The classical revival had commenced some years before the century opened, chiefly owing to the enthusiastic investigations into the principles of Greek art by Stuart and Revett and others, supported by the powerful Dilettante Society. Additional impetus was given to the movement by the importation to England by Lord Elgin in 1816 of the sculpture from frieze and pediment of the Parthenon at Athens.

As to the Gothic revival the lecturer referred to Horace Walpole's villa at Strawberry Hill, in which the spirit of Gothic was absent. The flame of the Gothic movement was fanned by the novels of Sir Walter Scott, and many pretty fancies followed its revival, but the result was that for a time XIXth century buildings were made to masquerade in mediæval garb. This was the state of architecture in the first half of the last century: the romantic and the classical schools were at loggerheads one with the other, and it is difficult for us now to understand with what bitterness the war of the styles was waged. Professor Cockerell was the captain of the classic camp, and Augustus Welby Pugin was leader of the Gothic, and two men more different it would be difficult to imagine. Cockerell was a man of intense refinement, exquisite taste, and considerable knowledge; his manner was polished as his work—a courtly gentleman, he was no match in a war of words for his fiery and outspoken opponent, who, a genius who died at the age of forty, owed much of his versatility and impetuosity to his forebears, who were French. Both men were enthusiasts and both were mistaken. The English of the XIXth century could no more return to mediævalism than it could return to the glories of Greece. Besides Cockerell, the classic camp included Sir John Soane, John Nash, Wilkins, Sir Robert Smirke, and Sir William Tite. One building which belonged to the period and which specially deserved mention as being universally regarded as the most successful of its kind in England, if not in Europe, was St. George's Hall, Liverpool, won by Elmes in competition.

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As to the architectural work of the second half of the century, there was a marked change. Pugin and his contemporaries had followed as closely as the limitations imposed on them permitted the English Gothic of the XVth century, but in the work now to be considered other forms were developed, and not all of them English. The increasing facilities for foreign travel had brought the Continent within reach of everyone, and foreign idioms crept in. Sir G. Scott got much of his inspiration of English Gothic from the XIIIth and XIVth centuries and took many of his ideas from French work, and other architects followed suit. Most of Scott's churches were of stone; the fine brick churches of London and elsewhere were of a later date and by other men, notably Butterfield, James Brooks, and others. Scott would be chiefly remembered as the central figure of the restoration movement which, started by the Cambridge Camden Society and backed up by the whole army of ecclesiastics, swept over the land in the sixties and seventies. A clean sweep was made of everything that was not Gothic, and the result was that an unrestored church was as difficult to find now as an unspoilt watering-place. Before the craze set in, churches were full of the work of all ages, every stone telling a story, and the history of England was written in and about these old buildings. The restorations of the XIXth century ruthlessly destroyed this history. The problem was no doubt a difficult one; to have allowed these old buildings to fall would have been an act of vandalism, and the wave of Gothic enthusiasm was too strong for half measures. In the case of the cathedrals and large churches, it was difficult to see how the restorationists could have acted otherwise than they did, but some of the parish churches might surely have been preserved without the elaborate schemes of restoration to which they were subjected. The money spent would have been better used in building new churches alongside the old ones and allowing the old buildings to remain as historical monuments, a little judicious attention preventing them from further decay.

From 1875 to the end of the century many churches were erected by Street, Butterfield, Burges, Pearson, Sedding, Mr. Bodley, and others which might fairly compare with the best examples of the Middle Ages. Street's great work, of course, was the Law Courts, in which he tried the impossible. This building, probably more than any other, showed the futility of employing Gothic for public buildings, and it might be termed the last great effort in the style.

The last quarter of the century was chiefly remarkable for the enormous advance which took place in the designing of private houses. The work of Mr. Norman Shaw and Mr. Philip Webb had an immediate effect on both domestic and street architecture. Before their erection stucco and Welsh slates had been supreme for private houses, but they gave way to red brick and tiles. The new style was promptly christened Queen Anne, and it had its affectations, but the style was a sound one and produced some excellent results, combined with some strange vagaries. The names of some first-rate living architects were not known as well as the names of living painters of even second or third rate rank, for people rarely looked at a picture without asking who painted it, but when they saw a beautiful building they rarely did more than inquire who lived in it or what it was for. Following the Queen Anne movement was a Continental invasion. Architects crossed the Channel and sketched interesting bits which they worked into their designs, and sketch-book architecture became the rage for a short time, but level-headed Englishmen after a while resented the intrusion of these undigested fragments. The chief fault of the Queen Anne movement had been a craving after the picturesque, and this was carried to a still further extreme by the sketch-book men. In time, however, the old adage that true picturesqueness lay in simplicity reasserted itself and buildings became plainer, architects relying more on proportion and less on ornamentation. Carving, where used at all, was not allowed to straggle all over the façade, but was massed in one or two places where it was desired. The sculpture and carving work was entrusted to artists and not to firms, and sculptors and architects worked once more in sympathy A more chastened version of classical architecture than the Queen Anne had now replaced that style, but how long the present movement would continue it was impossible to say. So many changes had taken place, so many phases of art had been attempted in the last century that no one could say how long it would last, but the chances were in its favour, and the style was adaptable. Correctness of detail was not insisted upon as in the case of the Greek or the classic revival: its fetters hung loosely on the designer and did not cripple his individuality. The great difference between work done now and that of a century ago was the variety in the present-day work. Utilitarian buildings one hundred years ago were frankly plain; now, fortunately, architectural expression was required in addition. The large hotels, the schools, private, public, and technical, the municipal buildings, the blocks of city offices, the big flats, etc., all required special planning and individual expression, and it was this that now made an architect's work so complicated and yet so fascinating. It was because of this that failure was so frequent and success so rare. Each separate building had to be planned, designed, originated afresh. From the observation of the various necessities of planning and from the proper expression given to each type would spring sooner or later a recognised architectural style—a style in which architects, sculptors, painters, and craftsmen, would work together in harmony. He said "sooner or later," but he thought he could go further and say that it is now springing up. Without some such uniformity of ideal advance in architecture was impossible. Art was like a State—it could not advance in the midst of civil war; but those who demand a new architectural style in honour of a new century ask for the impossible. There never had been such a thing as a new style; styles had always been evolved out of preceding ones, and the evolution had been so slow that it was impossible to say where one began and the other ended. To have an absolutely new architectural style we should have to have new buildings materials, new methods of construction, new requirements, a new climate, new conditions, and, in fact, a new earth.

Professor Simpson then showed a large number of interesting lantern slides to illustrate his remarks.

The Chairman proposed a hearty vote of thanks to the lecturer, remarking that he had induced the Council of University College to reorganise the scheme of architectural education altogether, and that important reform had been placed in the hands of Professor Simpson.

The vote of thanks was heartily agreed to, as well as a vote of thanks to the Chairman for presiding.

## THE ASSOCIATION OF MANAGERS OF SEWAGE DISPOSAL WORKS:

### THE SEWAGE PROBLEM.

A MEETING of this Association was held on Saturday afternoon last in the Library of the Sanitary Institute, Margaret-street, W., when Mr. W. D. Scott-Moncrieff delivered a presidential address entitled, "The Year's Progress in the Solution of the Sewage Problem."

The lecturer first quoted from a contemporary a review of sanitary engineering in 1903, after which he remarked that the first impression obtained from this long list of works in progress must be a recognition of the fact that, however Great Britain may be falling behind in other departments, we are still maintaining our position as the pioneers of sanitation. But, although it was flattering that other nations should look to us for light and leading upon all matters connected with public health, it was well known to all practical managers of sewage works that these great undertakings were being carried out from many different standpoints, and that their design was not connected by a common standard or by generally accepted formulæ of any kind. Things were all sixes and sevens, and a great Government department was sheltering itself behind a Royal Commission which had been sitting for about five years without even giving an expression of opinion upon the main issue they were to report upon. Yet it would be difficult to find a reference drawn more concisely than the one with which the Royal Commission had to deal. It was as follows:—

(1) What method or methods of treating and disposing of sewage (including any liquid from any factory or manufacturing process) may properly be adopted, consistently with due regard for the requirements of the existing law, for the protection of the public health, and for the economical and efficient discharge of the duties of local authorities.

(2) If more than one method be adopted, by what rules, in relation to the nature or volume of sewage or the population to be served or other varying circumstances or requirements, should the particular method of treatment and disposal to be adopted be determined; and to make any recommendations which may be deemed desirable with reference to the treatment and disposal of sewage.

This was the reference upon which the Royal Commission had been sitting for five years, and so far as regards the main issue they had gone no further than to say that certain methods, which were described in no detail, might be adopted with certain precautions which were not described at all. If it had never been appointed the hands of the Local Government Board would have been forced long ago. Public opinion would have expressed itself so strongly, and the department would have been so pestered by deputations, that it must either have proclaimed its incompetence on the house tops or have adopted a consecutive and rational policy of some kind. If the Royal Commission had proved competent for the work they had undertaken it would have been different, but as matters stand it might safely be said that the contributions of the Royal Commission towards the practical solution of the sewage problem so far as the public was concerned had been a blank. The four interim reports they had issued might very well have been produced by a departmental committee of the Local Government Board without committing them in any way.

Having referred to the methods of sewage disposal in Glasgow and Birmingham, the author said:—"Now in taking the case of these great cities—one still deliberately adopting a process at great expense which the other has absolutely abandoned, and effecting a great economy in doing so—it is important not to be led into any wrong conclusion. That the question is one of great importance to other communities, and that it amounts not only to a difference in degree but in kind is quite certain. The Corporation of Glasgow and the Birmingham, Tame, and Rea Drainage Board both acted under the advice of their expert, and it is difficult to believe that both of them can be right except under one supposition, namely, that the sewage of the two cities differs so materially that what was good for one did not apply to the other, and that each has been justified in carrying out their own works in their own way. Now this point is the crux of the whole question, and in speaking of the year's progress we may spend our time to some purpose in trying to investigate this contradiction. You will all agree with me that if the existing state of knowledge is so inchoate as to preclude the possibility of arriving at a sound conclusion, then the sooner that progress goes on the lines of more accurate knowledge the better for all concerned. We will presume that the scientific advisers of the Corporation of Glasgow were fully acquainted with the advantages to be obtained from the liquefying action of hydrolysing tanks, but that they believed there were good reasons for not adopting them. It could not be that the Glasgow sewage was not capable of undergoing a putreficative fermentation, because it is common knowledge that it does, and the only reason that one can think of as pointing to the use of chemical deposition is the old tradition that the organic matter in solution from a hydrolysed sewage is in excess of the capacity of any bacterial filter to deal with. In other words, they are spending money for chemicals upon a supposition which has been entirely disproved in the case of Birmingham. We are thus, I think, forced to the conclusion that the Glasgow scheme, involving a vast sum of money which is being saved at Birmingham, was adopted under advice which has been repudiated with the best results."

This was the sort of thing that was going on all over the country, while the Royal Commission was looking on as though it were an entirely disinterested spectator. It was obvious that all the works referred to, involving a gigantic sum of money collected from the rates, were being carried on in a haphazard way, unguided by any scientific knowledge that was worth the name. The methods now being employed were empirical from start to finish, and the mistakes that were being made, involving as they did an almost incalculable waste of money and efforts, were the result of blank ignorance as to the conditions that were essential in order to obtain economical success. The extraordinary feature of the situation was that no one—no chemist, no engineer, no expert of any kind—had taken the trouble to find out what the necessary conditions really were by any kind of standard that was capable of comparing one sewage with another in terms of the measured condition required to produce any standard of purity in an effluent. If the Corporation were to question their scientific advisers upon these essential points not one of them would be able to give an answer—a really scientific basis of any kind—and this being so one need hardly be astonished at the absence of any progress upon scientific lines. These remarks did not apply in the case of Birmingham, where a successful solution of the problem was being rapidly achieved by simply complying with the conditions which nature absolutely insists upon before becoming the servant of man. It was all nonsense about organic matter in solution in well hydrolysed sewage being ever in excess of a properly constructed bacterial filter to deal with. Those who maintained the contrary would have to produce a quite exceptional sewage in order to prove their point, because in a well aerated filter as much as twenty-nine parts per 100,000 of nitric nitrogen had been obtained from a hydrolysed sewage, proving a capacity for nitrification by the bacterial process which was far in excess of anything that could be required in the case of a town sewage like that of Glasgow. In regard to much smaller communities than Glasgow and Birmingham there was the same absence of any recognised basis to work upon, and the author described the procedure of a small town in regard to the disposal of its sewage in order to illustrate what was being done. Proceeding, he said:—"In connexion with the year's progress suggestion made in my last year's address has already borne fruit. The passage is as follows:—

"'After having been in the grit chamber long enough to allow of the deposition of the detritus and in the anaërobic tank long enough to hydrolyse the organic matter, the raw incoming sewage should be diverted to a second set of grit chambers and tanks, and the liquid which has been longest in the anaërobic tank should then be circulated so as to pass again through the first grit chamber so as to complete the hydrolysis of the suspended organic matter, which will otherwise appear as sludge.'

"I predicted that the adoption of my suggestion was only a question of time, and this has been fulfilled. The suggestion has been carried out in a provisional manner by the engineer of one of the largest sewage works in the country, and has given most surprising and satisfactory results. It now appears that there is every prospect of being able to confine the difficulty of dealing with sludge to little more than the mineral detritus carried down by the sewers, which is inoffensive and easily dealt with. Moreover, it has been discovered that the deposit from open hydrolysing tanks which have been in constant use and undisturbed for four years, after being discharged over the surface

of a field and dried, is indistinguishable from fine garden mould, and is absolutely odourless and inoffensive. The old question as to how far these aërobic changes, which occur in a properly constructed filter, can be depended upon to reduce the entire organic matter in solution in ordinary hydrolysed fluid is the only one that remains, and the answer, based upon a wide experience in Staffordshire and other districts, is quite positive. If a sufficient depth of filtering material is provided, and the requisite quantity of air for the life processes of the organism is supplied to them, there can be no doubt about the satisfactory character of the effluent. The only factors to be dealt with are:—(*a*) The depth of filter required to produce the necessary standard of purity in the effluent; (*b*) the quantity of air necessary for the life processes of the organisms; (*c*) the proper rate of flow per unit of filter bed surface in order to obtain the best results; and (*d*) the best period of rest between each discharge to prevent gelatinous growths in the filtering material. . . . Well, gentlemen, progress is being made very slowly, but I do not know of a single practical contribution that has come from an official source. The key-note of the system under which vast sums of money are being wasted is to make sure that everything is done in compliance with existing rules and regulations, whether these are flagrantly absurd or not. . . . Engineers and chemists seldom or never make any protest, but consider they have done their duty when they produce schemes which comply with the most outrageous official requirement. The compulsory purchase of absolutely unsuitable land and insisting in certain cases that the discharge of sewage must be limited to twenty-five gallons per head of the population when dealt with by bacterial processes are most outrageous requirements, but they have survived from conditions that in many cases are in no way applicable to the existing facts. It is to be hoped that next year will find that great improvements have been introduced and that economy combined with efficiency will follow."

Dr. Childs proposed, Mr. J. T. Hall (Staines), Chairman of Council, seconded, and Dr. Bostock Hill supported a vote of thanks to Mr. Scott Moncrieff at the close of the reading of the paper. The motion was agreed to, and Mr. Scott Moncrieff replied.

## THE INSTITUTE OF BUILDERS.

THE Twentieth Annual General Meeting of the Institute of Builders, Incorporated, was held at the Registered Offices of the Institute, 31 and 32, Bedford-street, Strand, W.C., on the 16th instant, Mr. W. F. King, President, in the chair.

The minutes of the last meeting having been read and confirmed, the Report of the Council was read, as well as the audited accounts and balance-sheets of the Institute General and Benevolent Funds for the year ending December 31, 1903.

The Report referred to the agreement arrived at with the Royal Institute of British Architects on the question of the conditions of contract, which has already been dealt with in our columns, and the Council expressed a desire to place on record its high appreciation of the action taken in this matter by their President, Mr. King. The Council also acknowledged the valuable services rendered by the Conditions of Contract Committee, and by Mr. Benjamin I. Greenwood (President National Federation of Master Builders). The Report further stated that:—

"The new forms bear on their endorsement the seals of the Royal Institute of British Architects, the Institute of Builders, and the National Federation of Master Builders. . . . Judging by the large number of copies sold, it is evident that the agreed forms have been well received by architects and builders generally throughout the country.

"Your Council had before it various Parliamentary bills affecting the building trade, and took the necessary action to support those beneficial to builders and contractors and to oppose those which were detrimental. . . .

"Your Council has decided to continue its opposition to the Plumbers' Registration Bill.

"Your Council was invited by the London County Council to make suggestions as to amendments of the existing Building Acts. The matter was referred to the Institute Parliamentary Committee, which co-operated with the Parliamentary Committee of the London Master Builders' Association. The Joint Committee came to the conclusion that it was necessary for the members to have the draft of the proposed bill in their possession in order to make suggestions upon it, and the L.C.C. was so informed.

"Complaints continue to be received of the insistence, here and there, of architects upon priced bills of quantities being deposited with tenders. Your Council has taken up several cases in various parts of the country with satisfactory results. On a similar matter some correspondence has passed between this Institute and His Majesty's Office of Works, your Council objecting to contractors' priced bills of quantities being handed over by His Majesty's Office of Works to clerks of works. The reply was to the effect that a Government office cannot conduct its business on the same lines as those suitable to individual employers.

"Your Council has had under consideration the Corporation of London Proposed By-Laws, *re* demolition of old buildings. Representatives of this Institute met a committee of the Royal Institute of British Architects, and attended a meeting of the Streets Committee of the Corporation, at both of which the views of your Council were fully expressed. The original draft has been considerably modified, and further action will be taken if the by-laws submitted to the Local Government Board contain clauses prejudicial to builders.

"In accordance with the instructions of the last General Meeting, your Council has considered the question of a form of contract for sub-contractors. Many valuable suggestions were received from members of the Institute, and an analysis of them was laid before the Conditions of Contract Committee and referred to the solicitor. A form has been drafted, and will be laid before the Annual General Meeting. . . .

"In consequence of His Majesty's Office of Works having made the quantities a part of its contract, the necessity no longer exists for this Institute to appoint surveyors to take out the quantities on behalf of contractors for Government works.

"A conference, attended by representatives of this Institute, was held on the 19th June (1903), at the Building Trades International Exhibition, to consider matters relating to the 'Standard Size of Bricks.' The recommendations of the conference were as follows:—

"'(1) The length of the brick should be double the width plus the thickness of one vertical joint.

"'(2) Brickwork should measure four courses of bricks and four joints to a foot.

"'(3) Joints should be ½ in. thick and an extra $\frac{1}{16}$th, making $\frac{5}{16}$ths for the bed joints to cover irregularities in the bricks. This gives a standard length of 9¼ in. centre to centre of joints.

"'The bricks to be measured in the following manner:—

"'A. Eight stretchers laid square end and splay end in contact in a straight line to measure 72 in.

"'B. Eight headers side to side, frog upwards in a straight line to measure 35 in.

"'C. Eight bricks, the first brick frog downwards and then alternately, frog to frog, and back to back, to measure 21½ ins.

"'A margin of 1 in. less will be allowed as to A, and ½ in. less as to B and C.

"'This is to apply to all classes of walling bricks, both machine and hand-made. . . .'

"Your Council regrets to report the loss by death of the following members:—Mr. Dudley C. Gayford, Mr. John Greenwood, Mr. B. E. Nightingale, Mr. S. T. Turtle, and Mr. G. Nelson Watts. Twenty-two new members have joined during the past year. . . .

"In accordance with the Articles of Association, the President, the Treasurer (Col. Stanley G. Bird, C.B.), one Vice-President (Mr. Woodman Hill), one Auditor (Mr. A. E. Parker), and four members of the Executive Council (Mr. B. Hannen, jun., Mr. W. Nicholson, Mr. A. F. Randall, and Mr. T. Rowbotham), will retire, but are eligible for re-election."

The Report and balance-sheets having been adopted,

The following elections were made for the ensuing year:—

President, Mr. C. H. Barnsley (Birmingham); Vice-Presidents, Mr. Woodman Hill (London), Mr. Jos. Bell, J.P. (Cambridge); Hon. Treasurer, Col. Stanley G. Bird, C.B. (London); Hon. Auditor, Mr. Edmund J. Hill (London); Executive Council, Mr. Jas. Carmichael (London), Mr. R. C. Foster (Rugby), Mr. L. Horner (London), Mr. T. Rowbotham, J.P. (Birmingham), Mr. C. W. Green (Liverpool).

A hearty vote of thanks was accorded to Mr. William F. King for so ably discharging the duties of President for the last two years.

The form of contract for sub-contractors was discussed and agreed to and the meeting then terminated.

PROPOSED IMPROVED STREET LIGHTING IN GLASGOW.—A meeting of the Watching and Lighting Committee of Glasgow Corporation was held on the 11th inst., when a report was submitted by a special committee which was appointed some time ago to consider how thoroughfares of the city might be better lighted than at present. It contained the following recommendations:—The adoption in the city of an improved system of incandescent gas lighting for all streets in which gas is used; the adoption of a suitable pattern of square lantern; the lighting of all car routes (not lighted by electricity) by two-burner lanterns, consuming 3¾ cubic ft. per hour; the lighting of all main streets, other than car routes, with single-burner lanterns, consuming 3¾ cubic ft. per hour, and all important crossings with double-burner lanterns; the lighting of all other streets with single-burner lanterns, consuming 2·8 cubic ft. per hour; the use of anti-vibrators in all lanterns erected in those streets in which heavy traffic prevails; that at street crossings transparencies indicating the names of the streets at the corners of which the lamps are situated be inserted in the lanterns; and that a staff of men be organised to inspect and attend to the burners and mantles. These recommendations were approved by the Watching and Lighting Committee. Mr. James D. Borthwick, Police Treasurer, estimated that the initial cost of the installation recommended would be 21,644*l.*, which, spread over eight years, would involve an annual charge of 2,706*l.*

## THE LONDON COUNTY COUNCIL.

The first meeting of the newly-elected London County Council was held on Tuesday in the County Hall, Spring-gardens, when the following elections were made: As chairman, Mr. J. Williams Benn; as vice-chairman, Mr. E. A. Cornwall; as deputy-chairman, Mr. F. F. Alliston; and as aldermen: Sir Francis Mowatt, Mr. R. Strong, Lord Sandhurst, Mr. W. E. Mullins, Mr. Isaac Mitchell, Mr. W. S. Sanders, Sir W. B. Richmond, Mr. A. Fowell Buxton, Mr. Whitaker Thompson, and Mr. Edward White.

*Loans.*—On the recommendation of the Finance Committee sanction was given to Hampstead Borough Council to the borrowing of 1,000*l.* for making up a new street, and a loan of 10,000*l.* was granted to the Poplar Guardians for poor law purposes.

*Oxford or Regent-Circus?*—The Historical Records and Buildings Committee reported as follows:—

"Our attention having been drawn to the inconvenience which is caused owing to the indiscriminate use of the terms "Oxford-circus" and "Regent-circus" for the circus at the intersection of Oxford-street and Regent-street, we directed that communications should be addressed to the City Council of Westminster and the St. Marylebone Metropolitan Borough Council, inquiring whether they saw any objection to the removal of the name "Regent-circus" wherever it appeared at the locality in question, with a view to giving preference to the name of "Oxford-circus" which we are of opinion should be retained. The local authorities in both cases expressed their agreement with the proposal, and we have accordingly asked them to give effect thereto by removing the name tablets bearing th name "Regent-circus," and by obliterating that name in all cases in which it is possible to do so."

*Stephenson's Engine.*—The Joint Committee of the Bridges and Historical Records and Buildings Committee recommended that the open space at the Lambeth end of Westminster Bridge be used for the erection thereon of the "Invicta," the engine constructed by Stephenson, and which Sir David Salomons had offered to present to the Council.

Mr. Beachcroft moved that the matter be referred back, on the ground that the proper place for the ancient specimen was in a museum. If anybody offered the Council the first cab, or sedan chair, would the Council undertake to place it in a similar position?

Mr. Burns seconded the amendment, and said the engine was not artistic enough to be placed in an open space.

Sir William Richmond said a more inconceivably ridiculous place than Westminster Bridge for the engine could not be imagined They might just as well propose to put it on the top of St. Paul's.

On a show of hands, the amendment was carried by a large majority, and the matter was accordingly referred back.

The Council adjourned soon after five o'clock.

## APPLICATIONS UNDER THE 1894 BUILDING ACT.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

*Lines of Frontage and Projections.*

*Hampstead.*—Bay windows to blocks of flats to be known as Priory-mansions, on the north-east side of East Heath-road, Hampstead (Mr. J. F. C. Bell).—Consent.

*Clapham.*†—An iron and glass porch to Lancaster Lodge, Chivalry-road, Clapham, to abut upon Bolingbroke-grove (Messrs. Rogers, Chapman, and Thomas for Mr. J. H. Thomas).—Consent.

*Dulwich.*—One-story shops upon part of the forefronts of Nos. 38, 40, 42, and 44, Forest-hill-road, Camberwell (Mr. W. Goldsmith for Messrs. Rogers Brothers, Mr. R. W. Welford, and the trustees of the late Mr. Chissell).—Consent.

*Dulwich.*—Retention of an addition to the one-story shop at No. 94, Lordship-lane, Dulwich, abutting upon Chesterfield-grove (Messrs. W. Martin and Co).—Consent.

*Hackney, Central.*—A one-story show-room addition upon the existing one-story shops at Town Hall Buildings, Mare-street, Hackney, abutting upon The Grove (Mr. J. Hamilton for the Hackney Furnishing Company, Ltd.).—Consent.

*Hackney, North.*—That the application of Mr. C. Cheston for an extension of the periods within which the erection of houses on the site of No. 1, Clapton-common, Hackney, to abut upon the north side of Filey-avenue and the west side of Upper Clapton-road, was required

to be commenced and completed, be granted.—Consent.

*Hoxton.*—Fixing of lettering on an iron and glass shelter in front of the Britannia Theatre, Hoxton-street, Hoxton (Mr. B. Crewe).—Consent.

*Lewisham.*—A porch in front of a proposed church on the south-eastern side of Torridon-road, Lewisham (Messrs W. D. Church and Son for the Rev. F. A. Trick).—Consent.

*Paddington, South.*—A one-story addition upon part of the forecourt of Nos. 24 and 26, Queen's-road, Bayswater (Messrs. Still, Wheat, and Luker for Messrs. Ushers Wiltshire Brewery Company).—Consent.

*Dulwich.*—An iron and glass shelter in front of the Lordship-lane Hall, to abut upon Woodvale, Lordship-lane, Dulwich (Mr. H. G. Brace for the Dulwich and Forest-hill Public Hall Company, Ltd.).—Refused.

*Hackney, South.*—A warehouse building at No. 17, Sutton-place, Hackney, to abut upon Urswick-road (Mr. J. Hamilton for Mr. T. C. Wootton).—Refused.

*Islington, East.*—That the request of Messrs. Crisp and Wilby for permission to retain a show-case on the forecourt of No. 100, Black-stock-road, Islington, be not granted.—Agreed.

*Kensington, South.*†—Buildings on a site abutting on the north-western side of Kensington-road and the eastern side of Melbury-road, Kensington (Messrs. Drivers, Jonas, and Co. for the Earl of Ilchester).—Refused.

*Lewisham.*—Buildings on a site abutting upon the east side of Mayow-road and north side of Sydenham-road, Lewisham (Messrs. J. Edmondson and Son for Mr. J. Edmondson).—Refused.

*Paddington, North.*—A one-story addition at the rear of Nos. 480 and 482, Harrow-road, Paddington, to abut upon Fernhead-road (Mr. F. L. Shepherd for Mr. J. Alexander).—Refused.

*Strand.*—A projecting shop front at No. 5, St. James's-street, St. James, Westminster (Messrs. Boehmer and Gibbs for Messrs. G. H. and A. Bywaters).—Refused.

*Wandsworth (Detached).*—One-story shops on part of the forecourts of ten houses on the north side of Rosendale-road, Herne-hill, to the westward of No. 1, Park-villas (Mr. P. C. Davies for Messrs. H. Block, R. Parry, H. Eaborne, and F. J. Chapman).—Refused.

*Width of Way.*

*Brixton.*—(*a*) That the resolution of the Council of November 17, 1903, consenting to the erection of a one-story shop upon part of the forecourt of Hebert House, Coldharbour-lane (Messrs. T. Laws and Sons) be rescinded. (*b*) A one-story shop, and sign-board over, upon part of the forecourt of Hebert House, Coldharbour-lane, Camberwell, with external walls at less than the prescribed distance from the centre of the roadway of Milkwell-yard.—Consent.

*Hackney, Central.*—That the application of Messrs. Still, Wheat, and Luker for an extension of the periods within which the rebuilding of No. 46, Morning-lane, Hackney, abutting upon Fox's-lane, was required to be commenced and completed, be granted.—Consent.

*Holborn.*—That the application of Mr. R. J. Worley for an extension of the periods within which the erection of a block of buildings on the south-east side of Shaftesbury-avenue, to abut also upon Vine-street, was required to be commenced and completed, be granted.—Consent.

*Kennington.*—The retention of a building adjoining No. 10, Frank-street, Kennington, with the forecourt fence at less than the prescribed distance from the centre of the roadway of the street (Mr. W. Bartholomew for Messrs. Richardson and Kingston).—Consent.

*Southwark, West.*†—A building on the west side of Mansfield-street, Southwark, with external walls at less than the prescribed distance from the centre of the roadway of the street (Messrs. R. Hoe and Co.).—Consent.

*Kennington.*—A building at the rear of No. 130, Dorset-road, Kennington (Messrs. Flood and King for Mr. F. C. N. Flood).—Refused.

*Space at Rear.*

*Kensington, South.*—A modification of the provisions of section 41 with regard to open spaces about buildings, so far as relates to the proposed erection of blocks (Nos. 6 and 7) of residential flats on the south-east side of Brompton-road, Kensington, with open spaces about such blocks (Mr C. W. Stephens for Harrod's Stores, Ltd.).—Consent.

*Stepney.*—A modification of the provisions of section 41 with regard to open spaces about buildings, so far as relates to the proposed erection of No. 50, Fieldgate-street, Stepney, with an irregular open space at the rear (Mr. J. E. Mullett for Mr. I. Lewis).—Consent.

*Kensington, South.*—A modification of the provisions of section 41 with regard to open spaces about buildings, so far as relates to the erection of a building at No. 40, Hyde-park-gate, Kensington (Mr. R. J. Worley).—Refused.

*Paddington, South.*—An addition at the rear of No. 24, Craven-hill-gardens, Paddington (Messrs. F. T. Bruton and Sons).—Refused.

*Deviation from Certified Plans.*

*Holborn.*—Certain deviations from the plans certified by the District Surveyor, so far as relates to the re-erection of No. 16, Ormond-yard, Queen's-square, Holborn (Mr. T. Wilson for Mr. W. C. Gidden).—Refused.

*St. George, Hanover.*—Certain deviations from the plan certified by the District Surveyor, so far as relates to the rebuilding of No. 94, New Bond-street, St. George, Hanover-square (Mr. W. J. Ancell for Messrs J. Lyons and Co., Ltd.).—Refused.

*Width of Way and Lines of Frontage.*

*Kensington, South.*—Buildings on the west side of Melbury-road, Kensington, to abut also upon Holland-park-road (Messrs. Drivers, Jonas, and Co. for the Earl of Ilchester).—Refused.

*Mile-end.*†—Three buildings with one-story shops in front on the west side of Coborn-road, Mile-end, southward of No. 3, Coborn-road (Messrs. Hammack, Lambert, and Son for Mr. J. J. Musto).—Refused.

*Line of Frontage and Construction.*

*Hampstead.*—The retention of a coal-shed at the rear of No. 1, Akenside-road, Hampstead, abutting upon Lyndhurst-road (Messrs. G. W. and H. G. Potter for Mr. F. W. Smith).—Consent.

*Holborn.*—An iron gangway across Castle-street, Farringdon-road, Holborn (Messrs. Lander, Bedells, and Crompton for Messrs Falk, Stadelmann and Co., Ltd.).—Consent.

*Formation of Streets.*

*Wandsworth.*—That the application of Mr. R. Robertson, for an extension of the period within which new streets on the Totterdown-fields estate, Upper Tooting-road, Wandsworth, were required to be clearly defined throughout and thrown open to the public as highways, be granted.—Consent.

*Building for the Supply of Electricity.*

*St. Pancras, East.*—A deviation from the plans approved on May 12, 1902, for the construction of an addition to a generating-station and works on the north side of Pratt-street, St. Pancras (Mr. S. W. Baynes for the Council of the Metropolitan Borough of St. Pancras).—Consent.

*Alteration of Buildings.*

*St. George, Hanover-square.*—An addition at No. 425, Oxford-street, St. George, Hanover-square (Mr. R. P. Kennedy for Messrs. Thrupp and Maberly).—Consent.

*St. George, Hanover-square.*—The uniting of Nos. 178 and 179, New Bond-street, St. George, Hanover-square, with an irregular open space at the rear (Messrs. E. Wimperis and Best).—Consent.

*Width of Way and Construction.*

*Fulham.*—The retention of a wood and iron building at the rear of the "Live and Let Live" beer-house, North-end-road, Fulham, abutting upon Portland-street (Mr. W. Stewart for Messrs Mann, Crossman and Paulin, Ltd.).—Consent.

*Rotherhithe.*—An iron shed on the north side of Rotherhithe-street, Rotherhithe (Messrs. Croggan and Co. for Messrs. Quirk, Barton, and Co.).—Consent.

*Means of Escape at Top of High Buildings.*

*Paddington, South.*—Means of escape in case of fire proposed to be provided on the sixth story of Nos. 12-17, Hyde-park-place, Bayswater-road, Paddington (Mr. F. T. Verity for the executors of the late Mr. A. Bush).—Consent.

*Height of Buildings.*

*Southwark, West.*—Retention of an addition to the premises of the Amalgamated Press, Ltd., on the south side of Lavington-street, Southwark, exceeding in height the width of that street (Mr. H. O. Ellis).—Consent.

*The recommendations marked † are contrary to the views of the local authority.*

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KING'S COLLEGE HOSPITAL.—The President of the Royal Institute of British Architects has nominated Mr. Rowland Plumbe, who accepts the appointment, to act as assessor in the competition for the designs of the projected new Hospital buildings at Denmark-hill, Camberwell, to accommodate 600 beds. The Ecclesiastical Commissioners have promised to contribute 2,500*l.* towards the Removal Fund, having regard to the fact that the Hospital will be erected upon a site in proximity to their large estates in South London and to the benefit which will thereby result to the poorer residents upon their property there. Towards the estimated initial expenditure of 300,000*l.* the total sum thus far subscribed amounts to 106,763*l.*, and a former patient will give 50,000 bricks of his own manufacture, delivered at the new works.

## *ARCHITECTURAL SOCIETIES.*

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The monthly meeting of the Sheffield Society of Architects and Surveyors was held on the 10th inst. in the Lecture Hall of the Literary and Philosophical Society, Leopold-street. Mr. T. Winder presided. Mrr. J. R. Wigfull, one of the local secretaries for the congress held in Sheffield last August, gave a lecture entitled "In Worksop and Neighbourhood with the British Archæological Association." His remarks were descriptive of one of the day's excursions undertaken by members and friends of the Association. Selecting the churches of Blyth, Worksop, and Steetley, he showed by means of plans and views their history and characteristic features. These churches, he said, were all of the Norman period, and formed excellent examples for the study of that style, as they embraced all the phases of the style from the somewhat rude and archaic work of Blyth to the perfected and semi-transitional work at Worksop. The latter, however, suffered extensively when the church was "thoroughly restored" in 1847. Most of the original features were then so reworked or replaced by new material as to give the idea at first of a new church. Some features of interest remained, notably the XIIIth century chapel and the beautiful iron-work on the south doorway. The lecture was illustrated by numerous lantern slides, exhibited by Mr. J. Atkinson, of University College. On the motion of Mr. C. M. Hadfield, seconded by Mr. W. Potts, and supported by Messrs. W. J. Pale, Horace Wilson, and E. Howarth, a hearty vote of thanks was accorded to the lecturer.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—At the eighth sessional meeting of this Society, Mr. Butler Wilson presiding, a paper on the "Sketching Excursions of the Birmingham Architectural Association" was read by Mr. C. E. Bateman, illustrated by 150 lantern slides prepared by Mr. John Ward These covered most of the ground traversed by the Society during the past ten years, which was indicated by a map embracing the following centres of operation:—Broadway, Ludlow, Oxford, Tewkesbury, Cambridge and Ely, Cirencester, Stamford and Peterborough, Burford, Banbury, and Kettering.

GLASGOW ARCHITECTURAL ASSOCIATION.—On the 8th inst. Professor Charles Gourlay delivered a lecture on "Athens and its Architecture" to the members of this Association, the Vice-president, Mr. James Lochhead, being in the chair. The lecturer gave the impressions he formed while studying architecture in Athens last year. Beginning with a general description of the beautiful situation of the city and of the Acropolis, he afterwards dealt with the lighting of the Parthenon, the peculiarity of position of the Panathenaic frieze on the Parthenon, and the suitability of its design and execution for its position. The Propylæa was next referred to as showing how much, due to its unfinished state, may be learnt regarding Greek methods of construction; the temple of Niké Apteros—the gem of the Acropolis; the Erechtheion, with its wonderful beauty of detail and the variations in its carving. Then the buildings on the plain were referred to, including the Theseion, the Choragic Monument of Lysicrates, also the Stelæ in the Ceramicus and in the National Museum, and the Olympeion and the Horologium of Andronicus Cyrrhestes, as owing their existence to foreign patrons of the city. Then followed the work of the Roman period in Athens as may be seen in the gate to the Agora, the monument of Philoppappus, the arch, and the library of Hadrian, the latter with its colour obtained by the use of different-coloured marbles instead of by painting the marbles according to the ancient Greek practice. The work of the Christian period was next referred to, particularly that to be found in the churches of St. Nicodemus, the Saints Theodore, the Kapnikarea, and the small Metropolis. Lastly, modern work as exhibited in the Academy of Science, the University, and the Library—all on the University Boulevard; also the modern Cathedral, the Royal Palace, the Observatory, etc. The lecture was illustrated by a large number of photographs and drawings, and by sketches drawn by the lecturer in Athens.

NORTHERN ARCHITECTURAL ASSOCIATION.—The annual meeting of the Northern Architectural Association was held on the 9th inst., in the rooms of the Association, 36, Northumberland-street, Newcastle, the President (Mr. J. Walton Taylor) presiding. The annual report was submitted by the Secretary, Mr. A. B. Plummer, from which it appeared that since the last report

15 members, 18 associates, and 18 students have been elected, and the total membership is now 224 as compared with 203 in the previous twelve months. The Report stated that a letter had been sent during the year to the City Council protesting against the Corporation officials carrying out public architectural works, and this was duly presented at a meeting of the Council. The library report showed that several additions had been made to the books. The demand had shown no falling off, the issues being 240 in all. The financial statement placed the receipts, including a balance in hand of 74*l.* 18s. 4d., at 209*l.* 9s., and, after meeting expenditure and investing 50*l.*, there was a balance of 49*l.* 4s. 10d. The reports were adopted, and the following officers were elected for the ensuing year:—President, Mr. J. W. Taylor; Vice-President, Mr. J. T. Cackett; Secretary, Mr. A. B. Plummer; Treasurer, Mr. R. Burns Dick; Librarian, Mr. H. C. Charlewood; with the members of the Council, who were re-elected.

### *ARCHÆOLOGICAL SOCIETIES.*

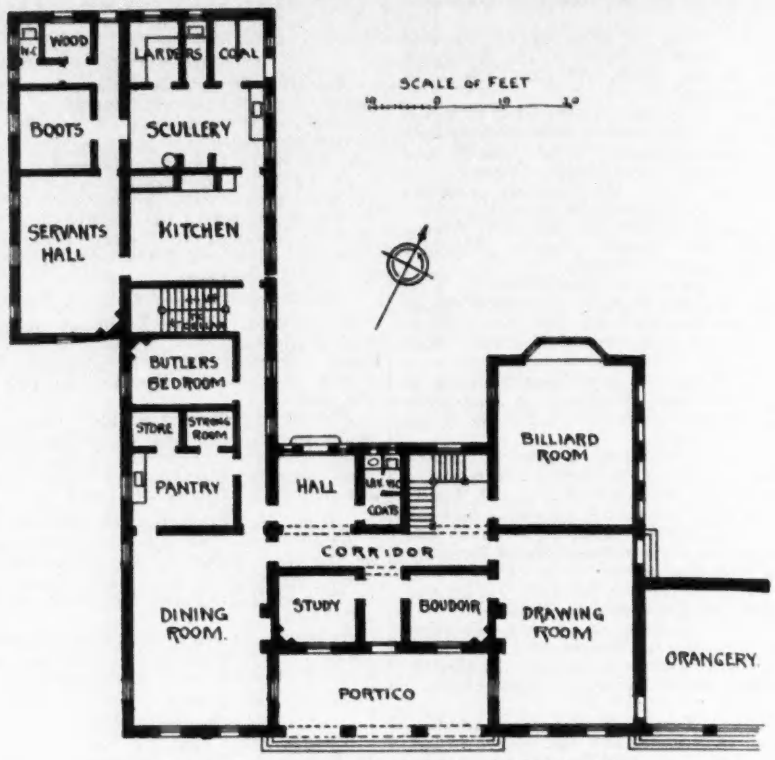
SURREY ARCHÆOLOGICAL SOCIETY.—The Surrey Archæological Society has announced that it has now completed the excavations upon which it has been engaged for several years on the site of the ancient Cistercian Abbey of Waverley, at Farnham, as further work would not be likely to be sufficiently fruitful in discoveries to justify the expenditure involved. The Society report that the importance of the work is shown by the fact that the plan which it has now been possible to draw of the conventual buildings is the most complete of any which has as yet been made of a Cistercian house. It is proposed to reproduce this plan in colour, and on the same large scale that has already been adopted for Fountains and other abbeys, in illustration of a full account of Waverley Abbey which Mr. Harold Brakspear will contribute to the Society's collections. Reporting upon last season's excavations, the Society states that an examination of the ground north of the brewhouse resulted in the discovery of a large block of buildings, consisting of a small chamber, placed east and west, and a much larger building to the north of it, the work being of the XIIIth century. Projecting west from the large building was an added building, divided into three aisles by wooden posts on chamfered stone bases. Mr. Harold Brakspear's impression was that the small chamber was a kitchen, and the building to the north the house for inferior guests; that to the west would then be the secular infirmary. A thick boundary wall to the north-west was followed. This turned at a sharp angle and ran on westward, and terminated in a small room, apparently of the XIIth century, with a doorway on the north and a fireplace on the east. North of this was a large barn, with a doorway on the east, opening out into a paved yard of considerable extent. South of the barn a large number of walls were found, but they all belonged to a period posterior to the suppression of the Abbey. The search for the gatehouse in this direction was unsuccessful. Some very interesting investigations were also made on the site of earlier excavations, with the object, successful in many cases, of clearing up doubtful points.

## Illustrations.

### VILLENEUVE-LES-AVIGNON: A VIGNETTE.

ACROSS the rushing waters of the Rhone lies the dead little town, its ragged roofs faded to cinder-colour by the heat of the southern sun. To reach it we traverse the Ile de la Barthelasse and the wooden bridge that leads to the opposite bank, and take the winding road that brings us close under the shadow of the tall isolated tower of Philippe-le-Bel. From here a slight bend to the left and we see the towers of the ancient fortress of Saint André standing above the sloping, sombre-coloured roofs of the town. Villeneuve is a vast ruin, or rather an accumulation of ruins—no modern buildings link the past and present; it belongs wholly to the Middle Ages. The once stately mansions of ecclesiastics and nobles now give dubious shelter to the poorer classes, and the household washing flaps and bulges prosaically from balconies and bays. The spacious courtyards are strewn with a decrepit multitude of objects—broken earthenware, dilapidated rush-bottomed chairs, rusty iron hoops, discarded implements of agriculture, and slimy garbage.

The old castle stands silent and dismantled, facing the grey mass of the Papal Palace across the water. Within the famous Chartreuse children sprawl barefooted on the refectory steps; the fresco s on the cloister walls, once bright and beautiful, are now dank and crumbling; the canopied well in the central court is overgrown with moss and lichen, and grass grows luxuriously between the flags—everywhere a feeling of neglect, a musty odour of decay. J. PERCY WADHAM.




*Sketch for a House for the Isle of Wight. Plan.*

### ENTRANCE HALL, "ELVEDEN."

THIS drawing illustrates the entrance hall in the additions recently completed. The enriched plaster dome is carried by marble columns with alabaster caps and bases. The walls are panelled in wainscot, left natural, up to the cornice. CLYDE YOUNG.

### GARDEN FRONT, HOUSE ON THE HADLEY ROAD.

WE give an illustration of the garden front of this house, of which the other front, with a plan and description, was published in our issue of September 19, 1903.

The present illustration was exhibited in last year's Royal Academy.

### SKETCH FOR HOUSE, ISLE OF WIGHT.

THIS sketch for a house, by Mr. G. O. Scorer, was designed for a site overlooking the sea. The materials to be used were Portland stone and red brick—a feature of the house is the orangery or winter garden. The work has not at present been carried out.

The drawing was exhibited at the Royal Academy last year.

### HOUSE, 37, CHEYNE WALK.

THE original history of the site of this characteristic house, and of the name given to it, the "Magpie and Stump," is indicated on the drawing. The front is a good example of effect obtained by very simple means, though the large egg and tongue ornament under the cornice is to our mind out of scale with the rest. The tinting of the original drawing was unfortunately not such as to come out well in lithographing, which has rather spoiled its appearance in the illustration.

### BOOKS RECEIVED.

THE MODERN CARPENTER AND JOINER. Edited by G. Lister Sutcliffe. Divisional-volume VII. (The Gresham Publishing Co.)

THE GREAT MASTERS: Reproductions in Photogravure. Part X. (W. Heinemann. 5s.)

LITTLEHAMPTON, ARUNDEL AND AMBERLEY. By W. Goodliffe. (The Homeland Association. 6d.)

FIRE AND EXPLOSION RISKS. By D. Von Schwartz. Translated by Charles T. C. Salter. (Charles Griffin and Co. 16s.)

COMPULSORY TAKING OF LAND BY PUBLIC COMPANIES, ETC. By Thomas Waghorn. (Effingham Wilson. 2s.)

## Correspondence.

### THE ARCHITECTURAL ASSOCIATION.

SIR,—I was unable to attend the special meeting when the proposed change of the day of meeting was discussed.

We have grown so accustomed to Friday that I shall be sorry to see any change made. The meetings have always been well attended, but the Jewish members and the week-enders should be considered.

I think that Monday will not suit the latter gentlemen, and it will prevent members of the Surveyors' Institution attending. I suggest that Tuesday be the day selected. There are very few meetings on that day, and the room put in order for the R.I.B.A. meeting on the Monday would remain ready for the A.A. on the Tuesday.

I conclude that meetings will be held at the new quarters after this session; there would be some loss of dignity, but some gain in convenience. HENRY LOVEGROVE.

### BUILDING BY-LAWS REFORM ASSOCIATION.

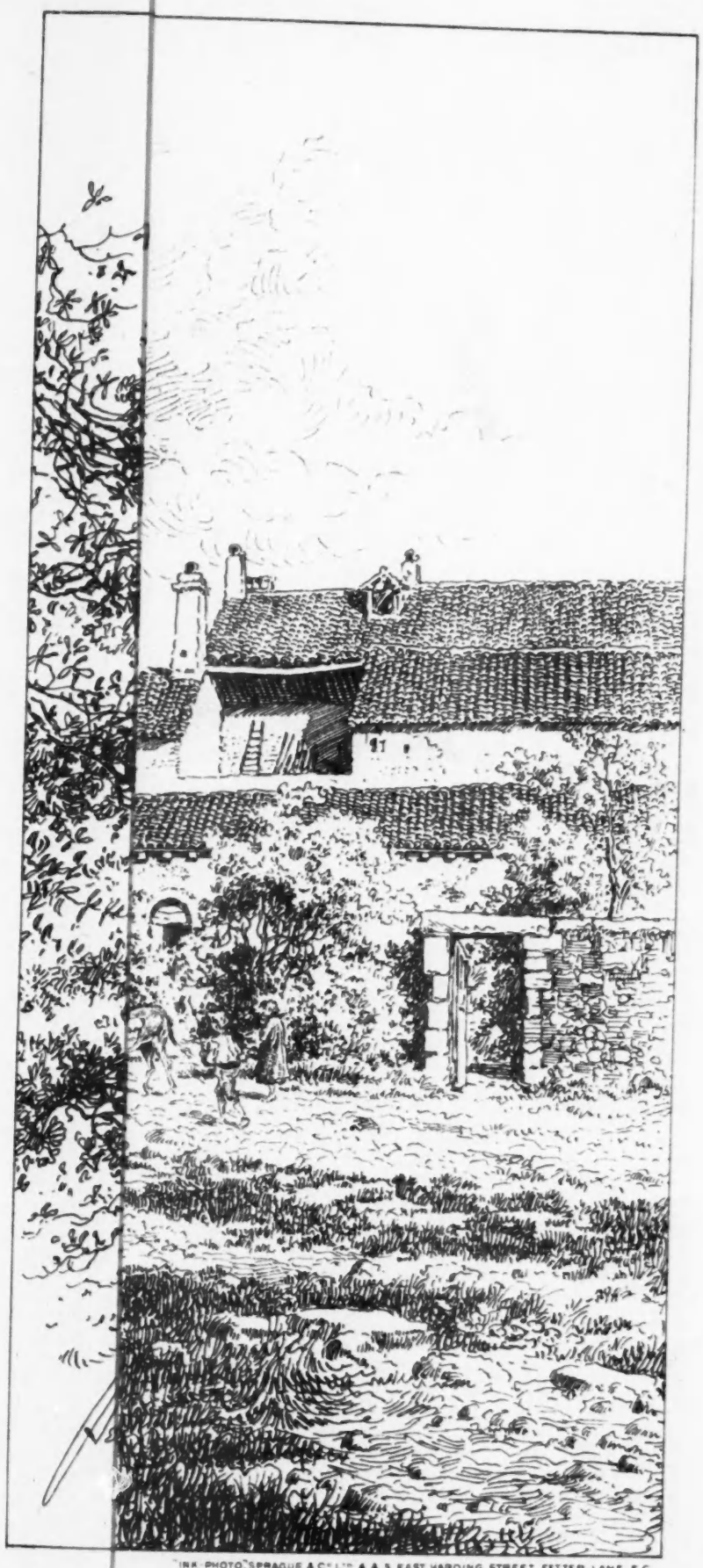
SIR,—The attention of my Executive Committee has been drawn to the report of the First Annual Meeting of this Association in your issue of the 4th inst., and I am directed to point out that your reporter (no doubt by inadvertence) has failed to do justice to the outgoing Council of the Association.

With regard to the amendment moved by Mr. Shallcross to refer back the report of the Council, no mention is made of the following facts:—

(1) That after discussion the gentleman who seconded the amendment asked Mr. Shallcross if he would withdraw the amendment, but it was pointed out that such a course was not permissible.

(2) That the seconder when the amendment was put to the vote abstained from voting.

(3) That Mr. Shallcross alone supported his own amendment; and (4) that when the resolution to adopt the report was put the whole meeting except Mr. Shallcross voted for it.



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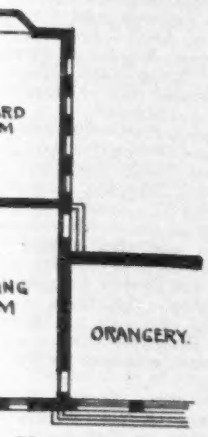


*Plan.*

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CARPENTER AND JOINER. Lister Sutcliffe. Divisional- he Gresham Publishing Co.)

MASTERS: Reproductions in Part X. (W. Heinemann. 5s.)

, ARUNDEL AND AMBERLEY. (The Homeland Association.

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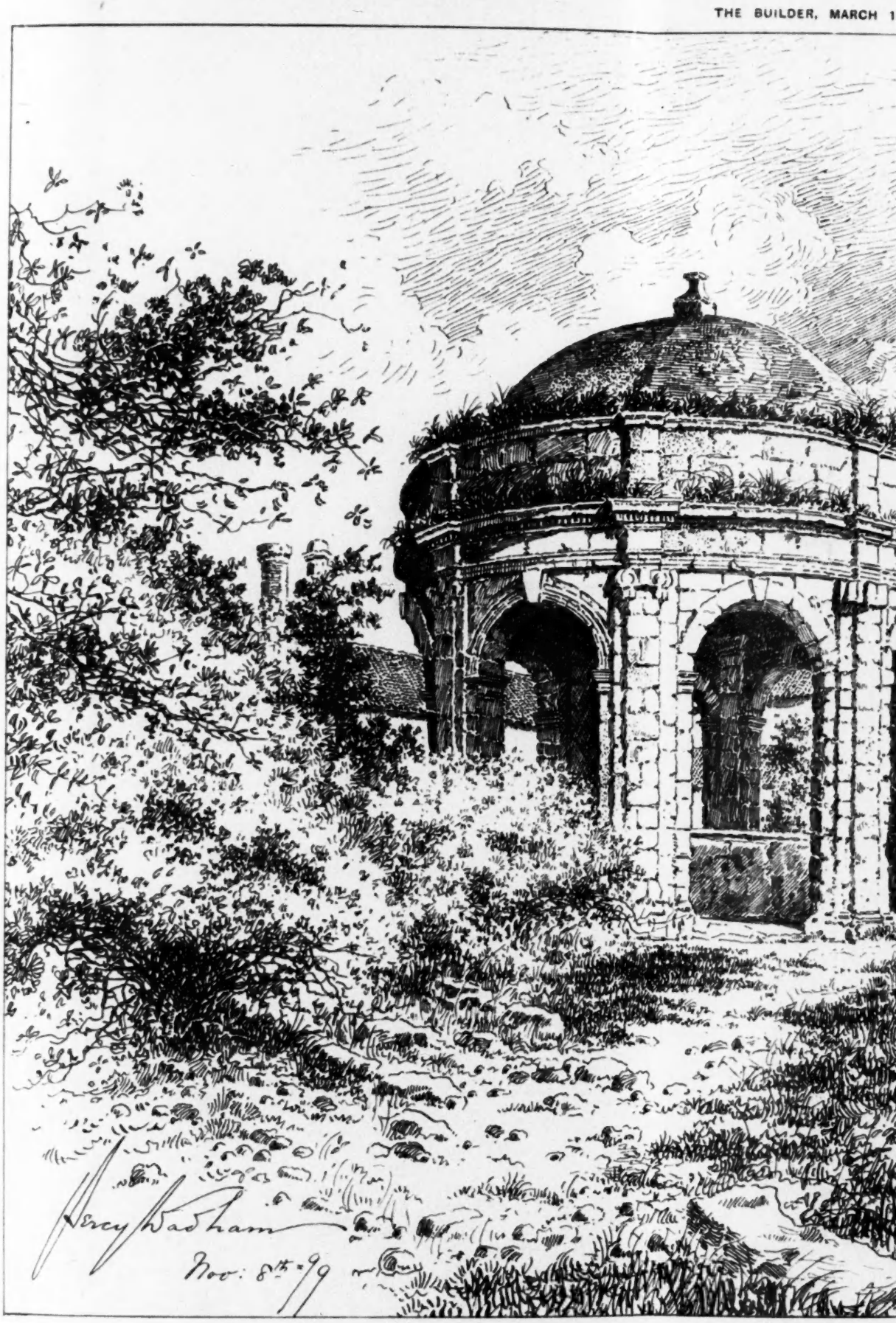


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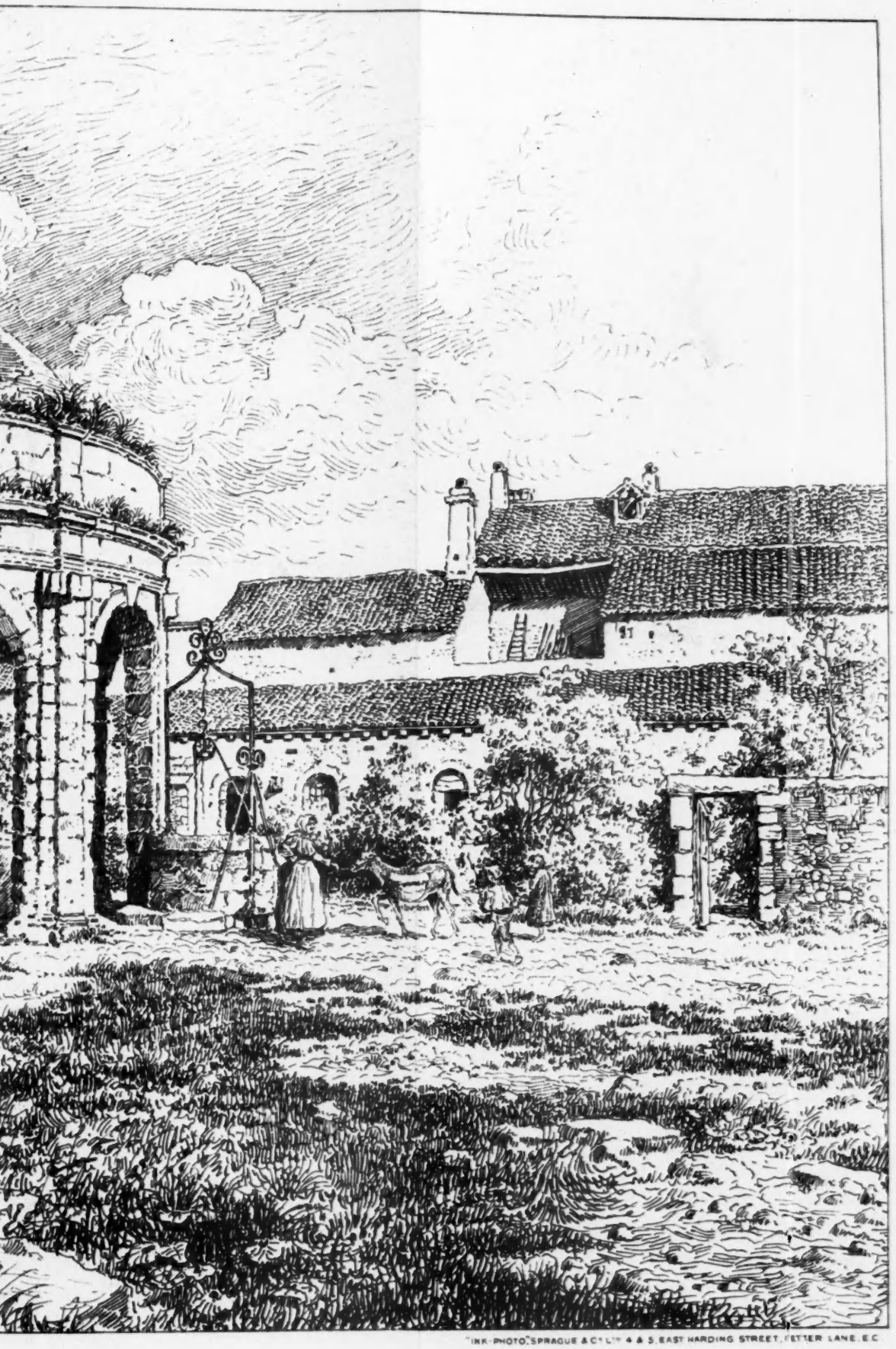

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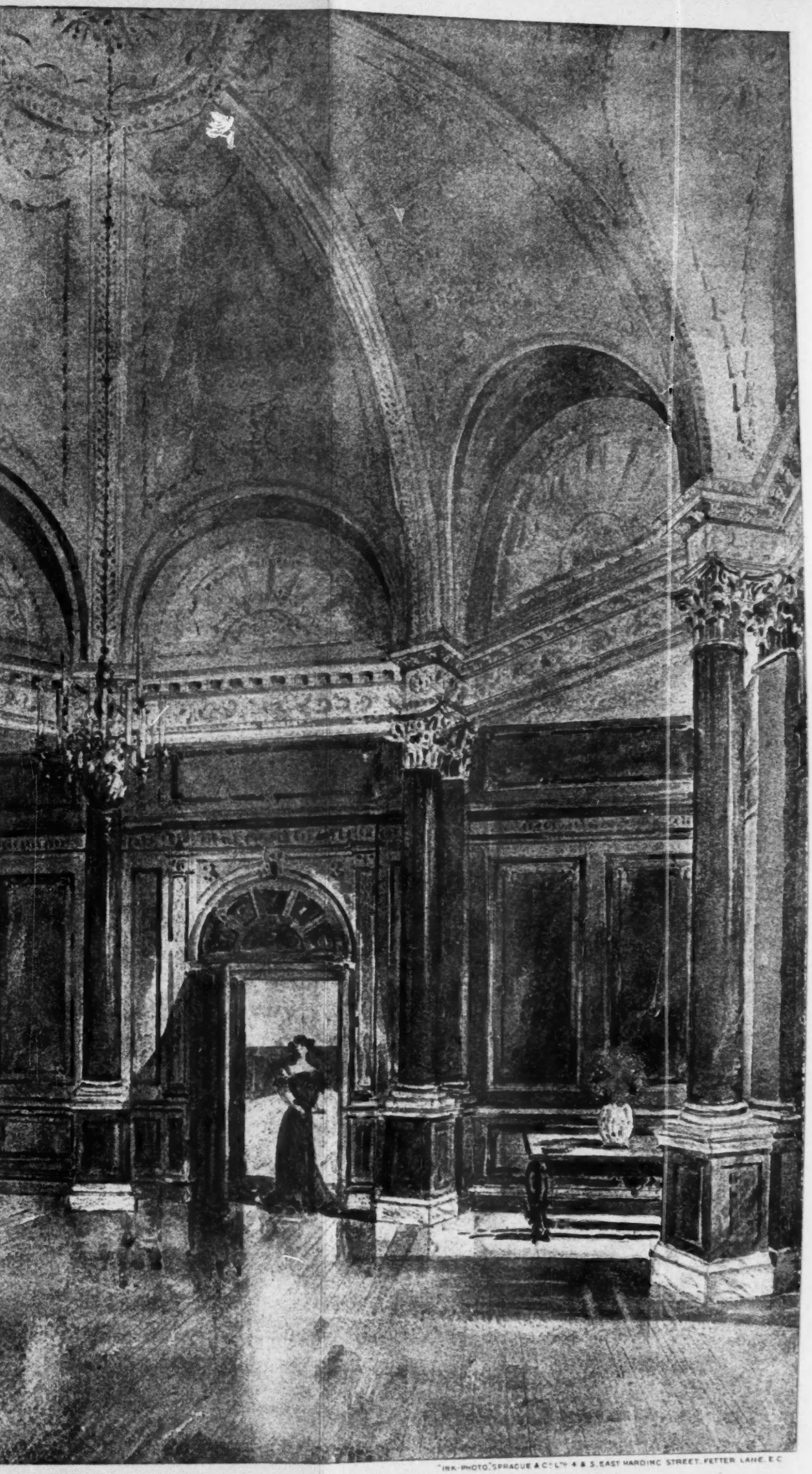
CHARTREUSE, VILLENEUVE-LES-AVIGNON.

R. J. PERCY WADHAM.

# THE ENTRANCE HALL ELVEDEN

ENTRANCE HALL, "ELVEDEN."—Mr. Clyde



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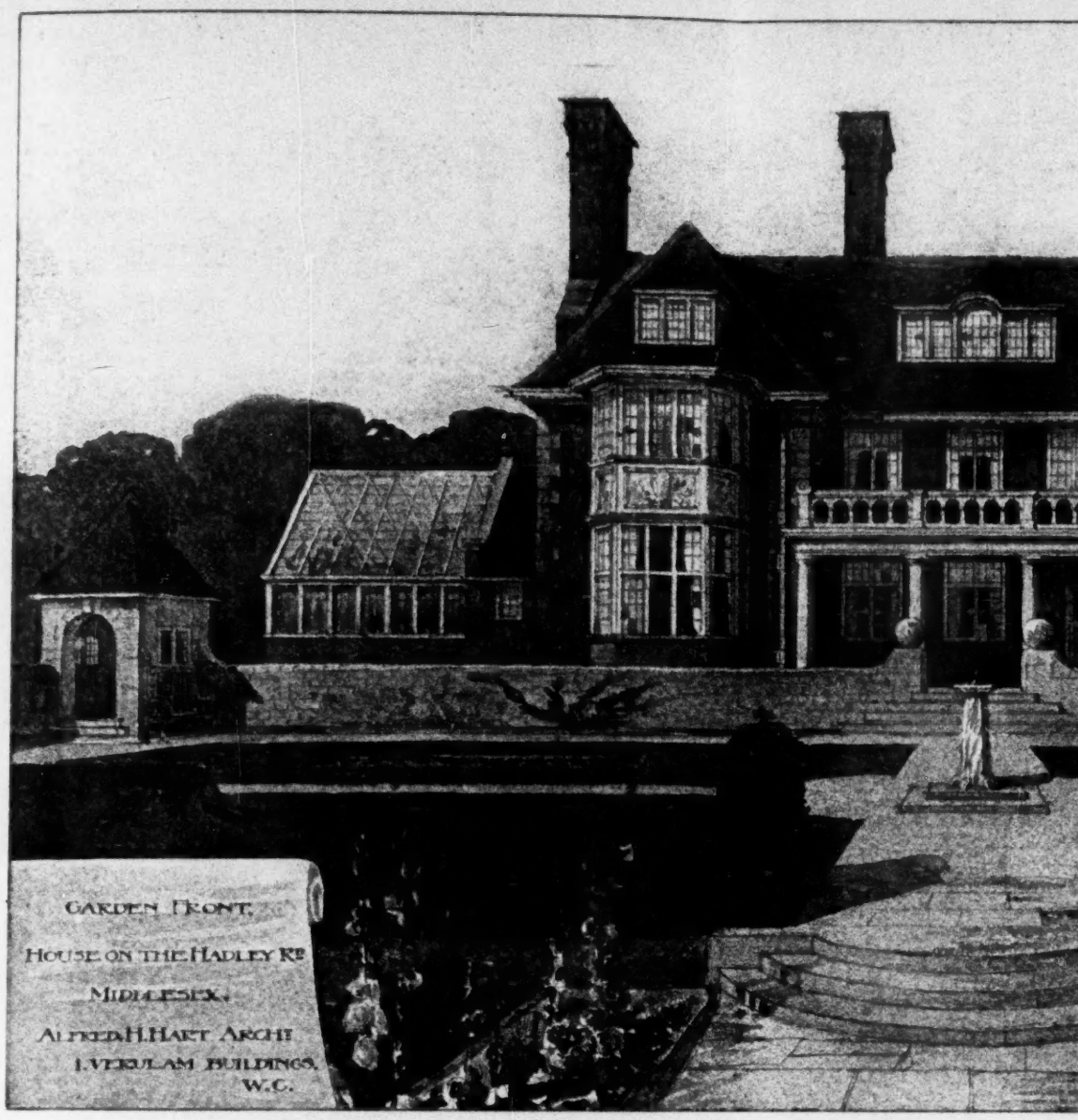
—Mr. Clyde Young, A.R.I.B.A., Architect.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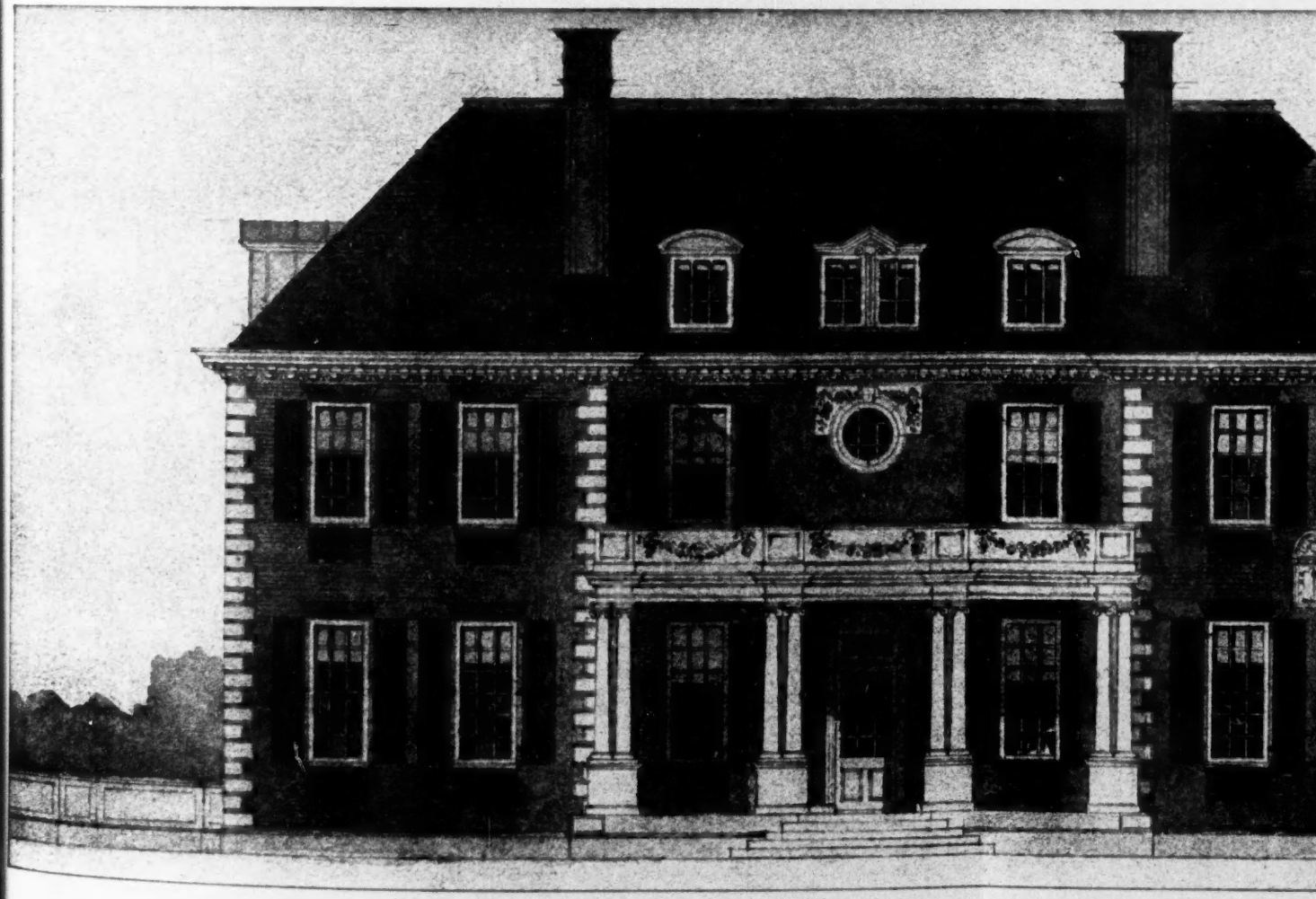
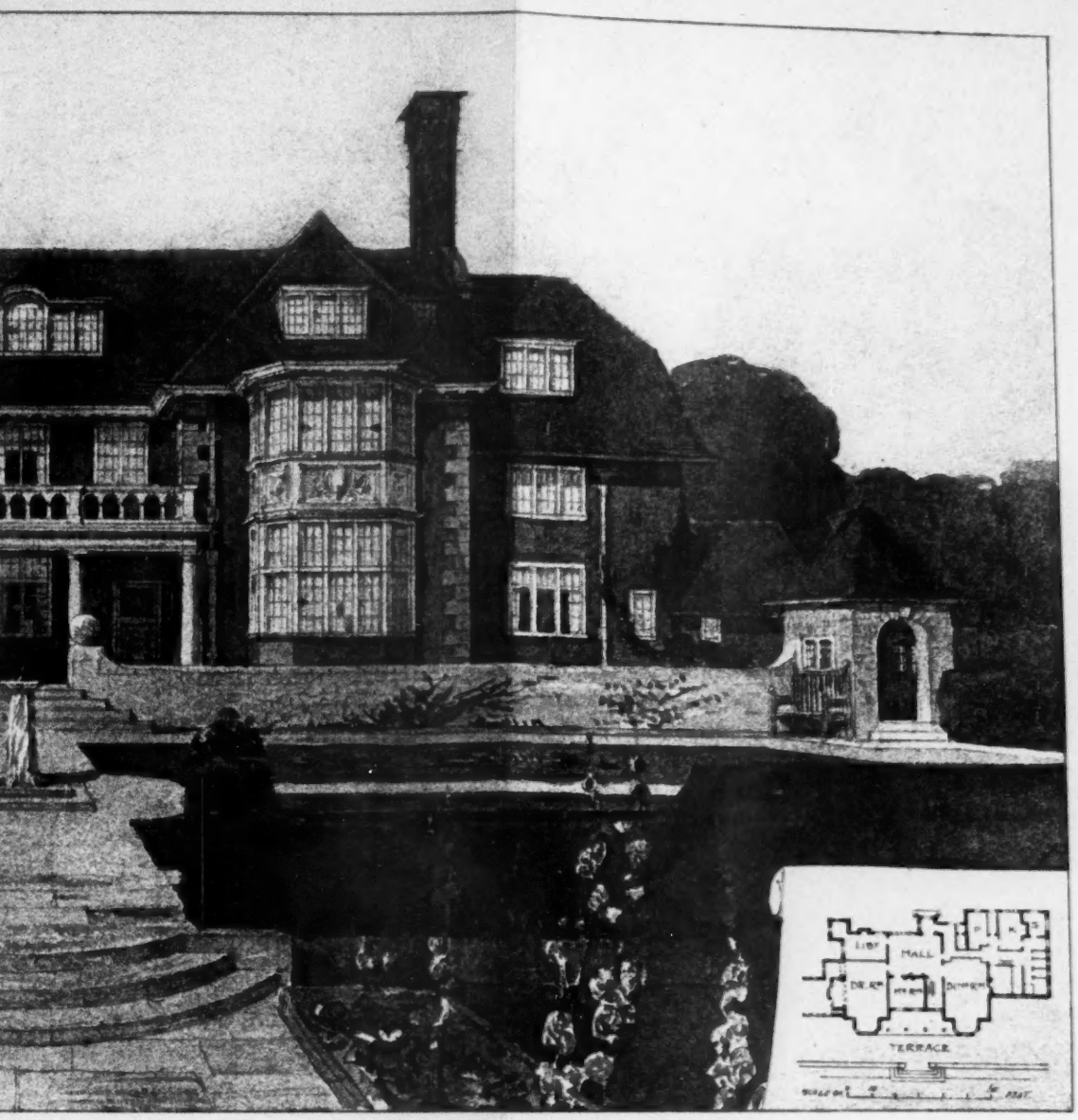
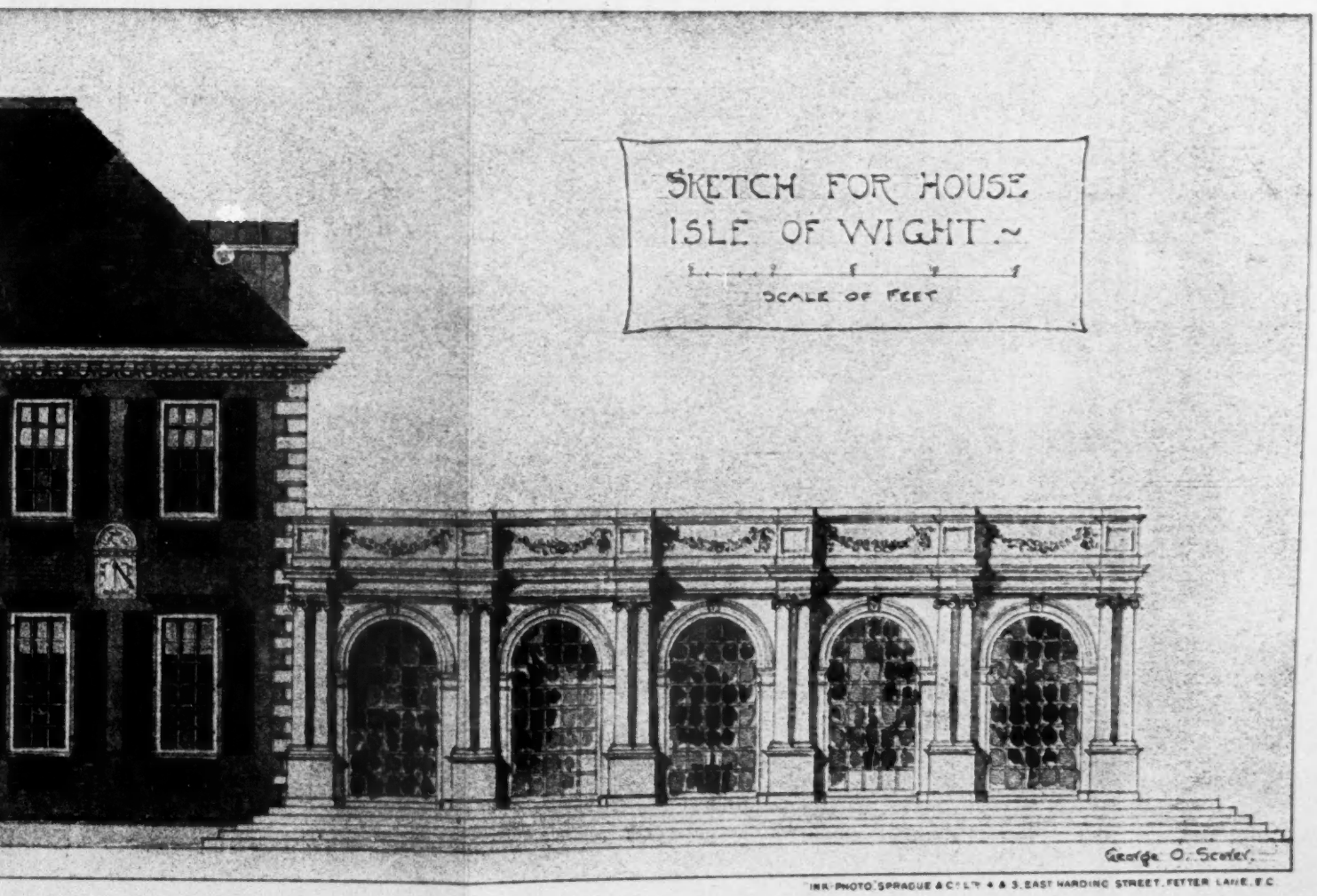
1. VERULAM BUILDINGS,
W.C.



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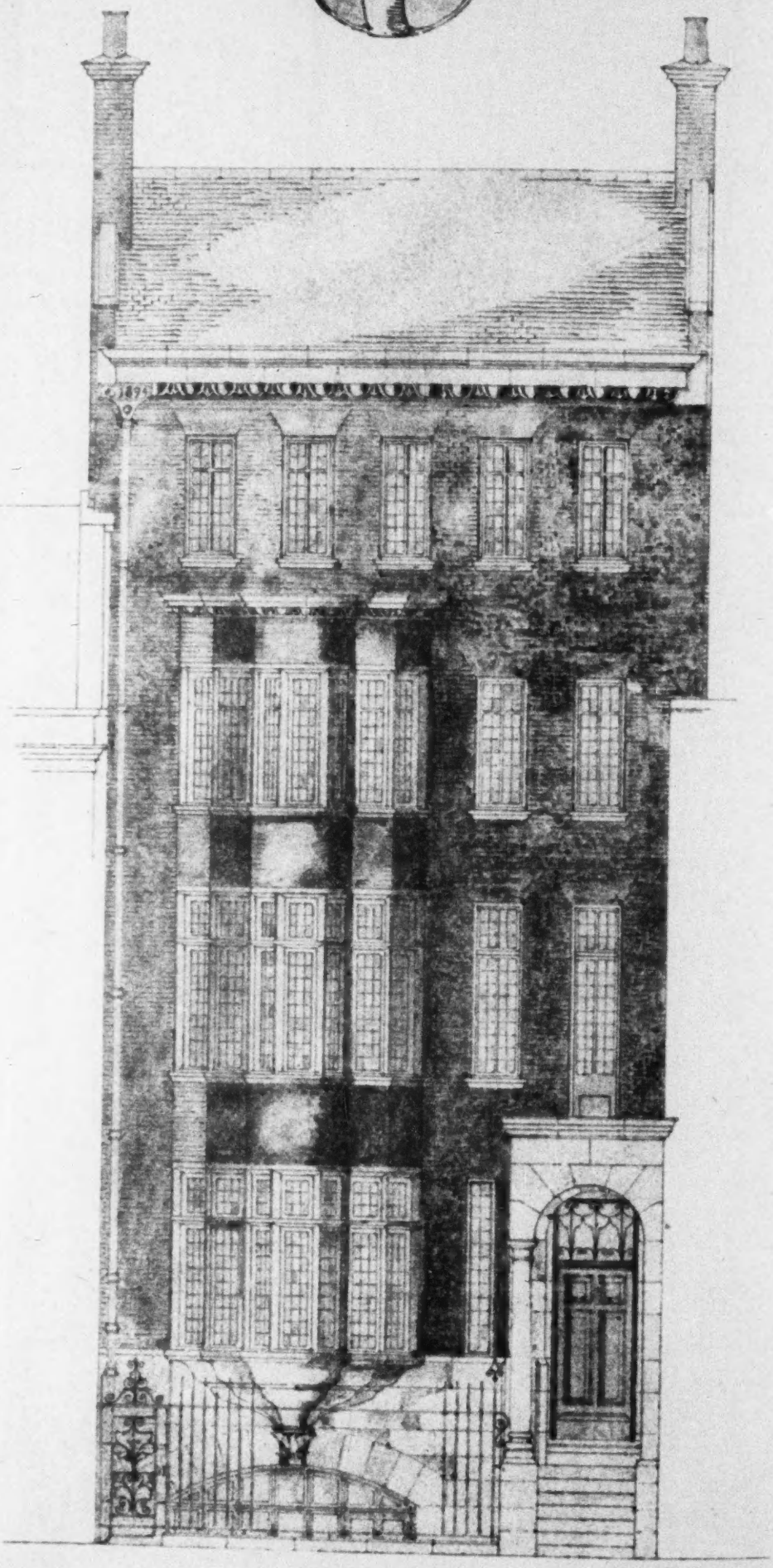
ON THE SITE OF
THE ANCIENT
MAGPIE AND STVMP

SCALE OF ELEVATION

BVILT 14
FIRST MENTIONED 1596
LEVERETS BEQVEST 1662
BVRNT DOWN 1886
REBVILT 1894



·FRONT·ELEVATION·

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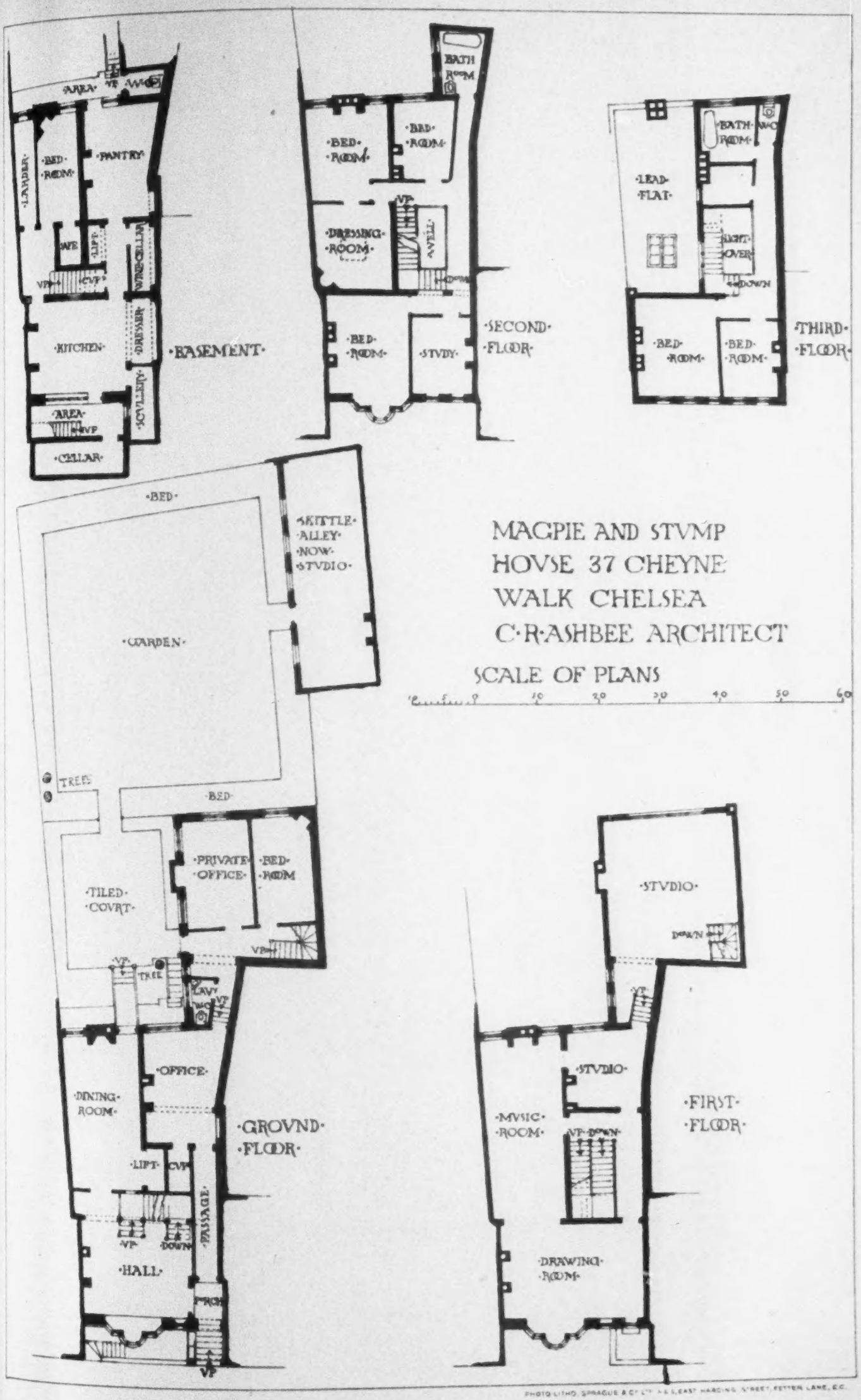


# MAGPIE AND STUMP HOUSE 37 CHEYNE WALK CHELSEA

C. R. ASHBEE ARCHITECT

SCALE OF PLANS

0 5 10 20 30 40 50 60

PHOTO-LITHO. SPRAGUE & Co. LTD. 44 & 45 EAST HARDING STREET, FETTER LANE, E.C.

The matter would be of little importance but for the danger there is that your readers may by the expressions "lost by a majority," "carried by a majority," be led to think that the Association is divided.

The truth is exactly the opposite. Fortunately the Association consists of members of varied views and experience in reference to building by-laws. It is equally fortunate that the Council are agreed upon the best course to be pursued in order to attain the object for which the Association was formed.

R. A. READ, Hon. Secretary.

***Our own representative was not present at the meeting. We relied on a report forwarded to us, which was apparently not as accurate in detail as it ought to have been.—ED.

## LONDON BUILDING ACT, 1894:

### TRIBUNAL OF APPEAL CASE.

THE Tribunal of Appeal under the London Building Act, 1894, met at the Surveyors' Institution, Great George-street, Westminster, on Tuesday, to hear an appeal by Mr. William Woodward (for Messrs. White and Co. and Mr. F. Sweetland) under section 43 (iii.) against the decision of the London County Council in the matter of the erection of a building on the site of 61, 62, and 63, Jermyn-street, Piccadilly. The members of the Tribunal present were Messrs. Penfold, Hudson, and Grüning.

Mr. Woodward conducted the case for the appellant, and Mr. Andrews, from the solicitors' department of the London County Council, appeared on behalf of the respondents.

Before the merits of the case had been entered upon, Mr. Andrews raised an objection on a point of procedure. He submitted that there had been no proper application to the Council within the period which enabled this appeal to be brought, inasmuch as a certain letter of the appellant was not an application, and the reply of the Council was not a decision within section 3 of the Act. Mr. Andrews further pointed out that the refusals of the County Council in September and October, which the appellant did not appeal against within fourteen days, could not now be proceeded with, as the time for such appeals had expired.

Mr. Woodward protested that in the Building Act no time was mentioned within which an appeal must be brought before the Tribunal.

Mr. Hudson pointed out that a matter of procedure of this kind was controlled by the regulations of the Tribunal, framed under section 182, and approved by the Lord Chancellor. One of these regulations, which prescribed fourteen days as the limit within which an appeal might be lodged, had, therefore, the force of law.

Mr. Woodward: Then, I am bound to confess that the fourteen days' regulation had escaped my notice.

Mr. Hudson: Unless the other side consents we have no power to extend the time. You are, therefore, in the hands of the County Council's representative.

Mr. Woodward said, that being so, he could hardly believe that the County Council would, on a most technical point, decline to allow a case like this to go before the Tribunal. He, therefore, appealed to the Council's solicitor not to allow his oversight to prevent the appeal being decided upon.

Mr. Andrews: For my part I am not afraid of this case on its merits, but if I waive my objection it will be on two refusals by the County Council, and, in the third place, on a document which, as I say, was not a regular application. There is a way out of the difficulty. If Mr. Woodward would put before the Council an entirely new application, there might be a possibility of an arrangement by an alteration of the route.

Mr. Woodward said he would like to go on with the case arising out of the second refusal.

Mr. Hudson: I do not see how Mr. Andrews can consent to that—he is not the London County Council.

Mr. Woodward pointed out that Police Court proceedings were to take place that afternoon. He wished to ask Mr. Andrews whether, if his suggestion were adopted, he would ask for the adjournment of the case.

Mr. Andrews could not pledge himself. It might possibly be convenient to inform the magistrate that they had both agreed to an adjournment pending a further application. But, in the meantime, no building must be done.

Mr. Woodward said his client was anxious to know whether, in the event of fresh plans being presented, Mr. Andrews would consider them *de novo*.

Mr. Andrews replied that personally he had nothing to do with such an application, but he was satisfied that if a reasonable scheme were submitted, the Council, which had not formed any preconceived notion, would duly consider it.

Mr. Woodward agreed to accept the suggestion of Mr. Andrews and to submit a fresh application to the Council, whereupon Mr. Andrews asked for cost of that day's proceedings.

The Chairman said the Tribunal agreed to the course taken, and thought 5*l*. would be an adequate order as to costs.

Mr. Andrews: The Council is always reasonable in the matter of costs in a case of this description. He added that if Mr. Woodward saw the District Surveyor there would doubtless be no difficulty in preparing a scheme which would obviate the defects of the previous ones.

## ROYAL COMMISSION ON LONDON LOCOMOTION.

AT the sitting of the Royal Commission on London Locomotion on Thursday last week evidence was given by Mr. H. Howard Humphreys, Consulting Engineer to the National Traction Engine Owners' and Users' Association. Witness stated that the use of traction engines and heavy self-propelled vehicles was growing with considerable rapidity owing to the great use being made of them for the haulage of heavy plant and timber and the removal of building material from areas which were being cleared. He advocated that such vehicles should be allowed to proceed at 4 miles an hour instead of 2 miles. If the use of such vehicles were limited the cost of building generally would be enhanced. The roads of London were well adapted to traction-engine traffic, and would not be injured if the wheels of the engines were kept within the limitation. He objected to the proposed L.C.C. by-laws to limit traction engines to main thoroughfares.

The Hon. J. Scott Montagu, M.P., gave evidence, and expressed the opinion that if means were taken to get the traffic to move quicker there would be less necessity for widening thoroughfares.

Mr. Charles Booth considered that improved facilities for travelling were wanted in London, for in no other way could the insufficiency and dearness of house accommodation be obviated. If London were to be laid out now there was no doubt there would be two or three levels.

At the sitting of the Commission on Friday Major-General Webber stated that, as Officer in the Postal Telegraph Service, Chief Engineer of the City of London Electric Lighting Co., founder of the Chelsea Electric Light Co., and in other capacities, he had an intimate acquaintance with the thoroughfares of London and their construction and maintenance. He advocated the construction of a tube railway from Clapham Junction to Paddington, and said that the London clay was better adapted for tube railways than was the case with any other city he knew of. Between 1870 and 1894 he had laid conductors of telegraph, telephone, and electric light under the streets in the City aggregating several thousand miles. With regard to telegraph cables, he advocated the "draw in and draw out" system, which, although more expensive, reduced interference with the streets to a minimum. In the City all the space available between the paving of the footways and the cellars on the great east and west lines of traffic had been appropriated. As regarded the ideal conditions of the provision of subways under the streets, one must have worked, as he had, in most of the streets of the City to realise the impossibility except at enormous cost and vast interference with the several services. If the L.C.C., in the construction of entirely new streets, could provide subways from curb to curb of the footway they would demonstrate the ideal, but it would be enormously costly. Under 99 per cent. of the streets of the Metropolis such subways would be altogether out of the question. The practice of local authorities restoring the roadway after disturbance in the laying of pipes, cables, etc., had led to the undertakers being charged a very high percentage above that which they could do it with their own staff, and the men employed by the Boroughs were very far from being good pavers. His own experience was that when the surveyor was a practical engineer, and had a free hand, the inconvenience of disturbance was minimised.

Mr. R. Elliott-Cooper, C.E., expressed a strong opinion that tubular railways worked by electricity and passing beneath the public streets and roads, linking up well-recognised centres, was the best means of relieving the congestion in London, except on some routes south of the Thames where an overhead railway would be more convenient and cheaper. He designed the Hammersmith, City, and North-East London Railway, which, after passing through the Commons, failed in the Lords Committee in 1902. The line was 23¾ miles long, and would cost 7,232,947*l*. It was proposed to run from Hammersmith, viâ Piccadilly-circus, Strand, Fleet-street, Cannon-street, Fenchurch-street, Bishopgate-street, Shoreditch, Hackney, to Abney Park Cemetery. From this point there would be two branches, one *viâ* Tottenham to Palmer's Green, and the other to Walthamstow. The terminal station at Palmer's Green would facilitate the development of the building property in the neighbourhood, while the Walthamstow branch would make available for building purposes districts on the outskirts of Walthamstow and Leyton. He believed that this scheme, if carried out, would go far to relieve the congestion of traffic in London.

## WESTMINSTER CITY COUNCIL.

THE usual fortnightly meeting of this Council was held at the City Hall, Charing Cross-road, S.W., on Thursday last week.

*Estimates.*—The Finance Committee submitted a number of estimates for the year ending March, 1905, which were agreed to. Among them were the following:—Alterations to entrances Buckingham Palace-road Library, 100*l*.; additional storage accommodation at Belgrave Wharf, 170*l*.; renewal of sewer, New Burlington-place, 295*l*.; paving works, New Tothill-street, 600*l*.; repairs Dufour's place depôt, 250*l*.; repairs Farm-street depôt, 200*l*. The Committee reported receipt of an order from the L.C.C. authorising the borrowing of 1,136*l*. in connexion with the Roehampton-street extension.

*Fire Insurance.*—The General Purposes Committee reported that they had given instructions for the insurance of the City of Westminster Dwellings, Regency-street, in the Alliance Assurance Co. for the sum of 48,000*l*.

*Combined Drainage.*—The Works Committee reported having considered a letter from the St. Pancras Borough Council forwarding a copy of a communication which had been addressed to the London County Council, and asking the City Council to support the action taken. The letter drew attention to the fact that when premises within one curtilage are subdivided into premises within two or more curtilages, the existing drain takes the drainage of more than one premises; that this subdivision takes place without the knowledge or sanction of the Council, and consequently the drain becomes a sewer. The Borough Council were of opinion that there was only one method of preventing a liability for private premises of this kind being thrown upon the public rates, and that was by making it compulsory for the owner to provide and deposit with the sanitary authority plans of the whole of the subdivided premises and of the whole of the drainage. In the case of plans not being deposited within three months of subdivision, or not being passed by the sanitary authority, then that authority should have power to compel the owner to put in separate drains to the sewer. In conclusion, the letter requested the L.C.C. to draft and promote a Bill in Parliament embodying these suggestions. The City Council concurred in the views expressed in the letter, and it was agreed to communicate with the L.C.C. in support thereof.

*Paving Works.*—The Works Committee recommended, and it was agreed, that the carriage-way of West Strand and Strand from 10 yds. west of Agar-street to the east side of Terry's Theatre should be repaved, the selection of material to be deferred until after the tenders were received. The paving will be either hard wood, soft wood, or asphalte. the space to be paved having an area of 5,400 sq. yds.

*Amended By-law.*—The Public Health Committee reported having considered an amendment of the By-law 26 made by the L.C.C. under section 39 of the Public Health (London) Act, 1891. The by-law, as amended, provides that the landlord or owner of any lodging-house should not be deemed to have offended against the requirement to maintain in connexion with such house water-closet, etc., accommodation in the proportion of not less than one water-closet for every twelve persons until the sanitary authority should have caused notice to be served on such landlord or owner requiring such provision to be made. On the recommendation of the Committee, it was agreed to inform the L.C.C. that the City Council approved of the proposed amended by-law.

ATHENÆUM CLUB.—On March 10 the Committee of the Club elected Mr. Aston Webb, R.A., as a member under the provisions of their Rule II., which empowers the annual election by the Committee of nine persons "of distinguished eminence in science, literature, the arts, or for public services."

## COURT OF COMMON COUNCIL.

THE Lord Mayor presided on Thursday of last week over the usual fortnightly meeting of the Court of Common Council held at the Guildhall.

Mr. Sidney J. Sandle proposed the following motion:—"That, having regard to the verdict of the jury at the inquest on the victims of the recent fire in Duke's Head-passage, Ivy-lane:—(*a*) It be referred to the Streets Committee to consider and report as to the desirability of giving effect to the following suggestions:—(1) That all posts obstructing the entrances to passages in Ivy-lane and other parts of the City be removed; (2) that the City authorities obtain powers, if they do not already possess them, to inspect all buildings and compel owners to provide proper means of exit through the roof by fixed ladders or other suitable means. (*b*) It be referred to the Improvements and Finance Committee:—(1) To obtain information with a view to ascertain the cost of carrying out the jury's recommendation to make a short street between Ivy-lane and Paternoster-square in the place of Duke's Head-passage, and thus do away with the dangerous obstructive buildings at both ends of this passage; (2) to prepare a return of the passages and alleys in the City of London which have obstructive buildings over their entrances, with a view to such action being taken which may be thought advisable in the interest of public safety, when suitable opportunities occur.

Mr. Sandle said he hoped that the suggestions of the fire and police authorities that all posts obstructing entrances to narrow passages should be done away with would be carried into effect. With regard to the rider of the jury in the present case, that owners of houses in the City should be compelled to provide proper means of exit through the roof by fixed ladders or other suitable means, he thought that immediate action should be taken to secure its being carried into effect.

Mr. Downes said that Duke's Head-passage was a veritable death-trap, and the only wonder was that more lives were not lost at the recent fire.

Mr. Morton thought there was no doubt but that Parliament would immediately support any Bill based on the lines of the jury's recommendations, and, having regard to the urgency of the case, he trusted that immediate action would be taken. He hoped that in the future the Court would take particular care in the matter of granting permission for bridges to be erected over narrow passages

Mr. Hollington protested against panic legislation, and asked the Court to adjourn the consideration of the matter. There were houses in the City where the provision of means of access on to the roof would result, in the case of panic, in more serious loss of life than if such exits did not exist.

The motion was agreed to.

## *OBITUARY.*

MR. P. P. PUGIN.—We regret to have to record the death, in his fifty-third year, of Mr. Peter Paul Pugin, of the firm of Pugin and Pugin, architects, which took place at Bournemouth on the 10th inst. Mr Pugin was the third and youngest son of Augustus Welby Pugin, the most illustrious of the name, who was so great a figure in the Gothic revival. Following in the footsteps of his two elder brothers, he embraced the profession of architecture, and rose to a position of considerable distinction therein, his clients among the Catholic clergy in England and Scotland being very numerous. Of the principal architectural works carried out by Messrs. Pugin and Pugin we may instance the following, indicating with an asterisk the dates on which illustrations and plans were published in our columns:—The Franciscan Church at Glasgow (1879); the Presbytery at Ormskirk (1880); St. Joseph's Roman Catholic Church at Greenhill, Swansea (November 19, 1887*); St. Peter's College at Bearsden, Glasgow, for fifty resident ecclesiastical students of the Roman Catholic Arch-diocese of Glasgow (September 21, 1889*); and the Abbey Church of the Benedictine Monastery at Fort Augustus, N.B. The church built of grey granite, is 300 ft. in length, and has a tower 260 ft. high (1890-1). Messrs Pugin and Pugin were selected, with fourteen other competitors, to submit designs (October 15, 1887*) for the new façade of Milan Cathedral. Their designs, we should mention, were exhibited with the rest, but, having arrived too late by reason of a delay in transit, were not reckoned as eligible for the actual competition. The firm prepared the plans and designs for an enlargement, doubling the capacity, of the Church of the Sacred Heart in Talbot-road, Blackpool (1895); for the Roman Catholic Churches of St. Patrick, for about 1,000 seats, at Shieldmuir, near Motherwell, co. Lanark (1897-8); of St. Mary, at Heaton Norris (1897); in Portugal-street, Glasgow (1896-7); St. Augustine, in Buchanan-street, Coatbridge, co. Lanark (1897-9); of St. Patrick, in North and William streets, Anderston, Glasgow (1896-7); in Cannock-street, Greenock; at Thornton, Lancashire (898); and of Our Lady of the Angels and St. John the Evangelist at Princethorpe, Warwickshire, together with the new laundry block, bakery, kitchen, and other domestic buildings there (Mr. Pugin). In May, 1884, Messrs Pugin and Pugin were appointed as the architects for the restoration, together with extensive additions, of the Old Palace at Mayfield in Sussex. They made the plans and designs for several other Roman Catholic edifices, including the churches of Our Lady of Lourdes and St. Bernard in Kingsley-road, Liverpool, opened in May, 1901; St. Thomas of Canterbury, at Port Clarence, co. Durham; of St. Joseph, at Skerton, Lancashire, and of the school chapel there (1896-1900); the chapel erected by the congregation of the Church of Our Lady of Good Aid at Motherwell, Glasgow, which has a capacity for 1,000 persons, and was opened on December 9, 1900; at Haverton Hill, in the county of Durham; at Aigburth, in the county of Lancaster, opened on May 27, 1900; the Franciscan Church of St. Bonaventure, in Egerton-road, Bishopston, whereof the first portion, with part of the Friary at Horfield (also by them), was completed in the summer of 1900; the Roman Catholic churches of St. Joseph, in Slyne-road, Lancaster, and of St. Patrick, in Main-street, Coatbridge (1895-96); and the lady-chapel and sacristies for the Church of All Saints, in Barton, Lancashire. Mr. Pugin designed the reredos of the Roman Catholic Church of St. Joseph at Dundee, and the stained-glass window of the Roman Catholic Church of St. Augustine, at Forest Gate; the firm made the designs for the memorial tablet to the late Rev. James McIntosh in St. Margaret's Church, at Airdrie, co. Lanark (1895); the new high altar of Caen stone and the reredos for the Roman Catholic Church of Our Lady at Birkenhead; the altar, tabernacle, relic cases, etc., for the Roman Catholic Cathedral of St. John at Salford; the Canon O'Keefe memorial altar in St. Patrick's at Coatbridge, near Glasgow (1902); and the altar, executed in marble and Caen stone for the Roman Catholic Church of St. Mary at Morecambe. In 1898-9 the firm completed, with a chancel, the Church of the Sacred Heart in Quex-road, Kilburn, of which the nave was begun some twenty-five years ago; two years ago they added to the Notre Dame Training College at Liverpool the two blocks facing Mount Pleasant, which comprise respectively the recreation hall and dormitory, and the music, science, and art rooms, lecture hall, class-rooms, and laboratory. They were architects also of the large and important Roman Catholic Church of St. Peter, with chapels, sacristy, and presbytery, built throughout of red sandstone, in 1901-2, at Partick, Glasgow. Their most recent work includes the new Industrial Schools for about 140 girls at Blackbrook, near St. Helens, Lancashire, begun in August of last year. Mr. Pugin was the author of a paper upon the work of the late A. Welby Pugin, which he read on March 5, 1900, to the Philosophical Society of Glasgow. In 1886 Mr. Pugin married the third daughter of the late Mr. John Bird, of Brook Green, Hammersmith, W., by whom he leaves five children. Some two years later he was created a Knight of St. Sylvester by the then Pope Leo XIII. as a token of recognition of the work he had done for the Catholic body in Great Britain in the course of his professional career. We may add that Mr. Pugin designed over four hundred and fifty altars in all parts of England and Scotland, and designed the marble tablet in memory of the late Cardinal Vaughan which has just been set up, by the Sisters, in the cloister of Narazeth House, Hammersmith. He was buried on Tuesday last, in the family vault at Ramsgate.

MR. T. COX.—The funeral of Mr. Thomas Cox, architect and surveyor, Hackins-hey, took place at Kirkdale Cemetery, Longmoor-lane, recently. The deceased, who had been in ill-health for some time, passed away at his residence, 60, Queen's-road, Bootle, in his fifty-seventh year. He went to Liverpool about thirty-two years ago, and for the last twelve years had been the architect for the Bootle School Board. He had also done a great deal of work for the Bootle Corporation, the library and baths at Marsh-lane having been designed by him.

MR. QUARTERMAIN.—We have also to announce the death, on February 25, at his residence, Abingdon, in Dorset-road, Merton Park, Surrey, of Mr. Henry Goodall Quartermain, architect and surveyor, aged sixty-one years. Mr Quartermain was the son of a timber merchant and contractor in business at Oxford, and served his articles to J. G. Smither, of London. He was appointed as their architect and land surveyor by the Merton Park Estate Company for the laying out of, and the building of houses upon, their property at Merton. He also made the plans for the offices in Kingston-road of the Merton Parish Council (1902), the Rutlish Science School at Merton (1901), and of various residences, club-houses, etc., in the south-eastern counties.

# The Student's Column.

## ARCHES.—XII.

IN Rankine's works a considerable amount of attention is devoted to the discussion of the arch, but it is unfortunate that his theory is published in a somewhat inconvenient form for study and reference. In fact, it is only possible to obtain an intelligible idea of Rankine's views after carefully searching out and collating the information scattered through various chapters of his works. Even when this has been done, it will be found that much of his teaching is conveyed in mathematical forms difficult of practical application.

One of the most useful parts of his writings relating to the subject of arches is to be found in the investigation of the various curves assumed by a chain under different conditions of loading, and in the consideration of these curves, in an inverted position, as typical forms for arches under similarly distributed loading.

In "Civil Engineering," p. 202, it is pointed out that the principles of the catenary are applicable to linear arches by conceiving the chain to be exactly inverted so that the load applied to it shall act inwards instead of outwards, and by supposing, further, that the chain is in some manner stiffened so as to enable it to preserve its figure and to resist a thrust. The propositions and equations previously given by Rankine* for the curves of a chain apply equally to the corresponding curves of a linear arch.

The definitions contained in Article IV., p. 85, briefly describe some of the curves corresponding with those assumed by a chain under different distributions of loading; but, with the object of affording a consecutive record of Rankine's views, we will now refer to the various curves discussed by him in connexion with the masonry arch.

(1) When the load is vertical and distributed uniformly along a horizontal line the curve is a parabola. As reference to our previous articles will show, these conditions do not obtain in masonry arches.

(2) When the load is vertical and distributed uniformly along the curve the result is either a catenary or a transformed catenary. This condition would be represented by a catenary arch supporting a masonry spandrel wall of which the whole weight is assumed to be supported by the arch. We have already shown (Article VII., p. 171) that the loading cannot correctly be regarded as entirely vertical. Hence the conditions of loading here stated are only approximately applicable to masonry arches.

The variations of form of the catenary are defined in Article IV., pp. 85-86. Rankine's equations for these curves require the employment of Naperian or hyperbolic logarithms, and the determination of values by his formulæ is somewhat laborious.

(3) When the load is uniform and normal throughout, the curve is necessarily a circle. Rankine determines the external pressure or thrust by Navier's principle, which is as follows:—"The thrust at any normally pressed point of a linear arch is the product of the radius of curvature by the intensity of the pressure at that point, or, denoting the radius of curvature by $r$, the normal pressure per unit of length of intrados by $p$, and the thrust by T, we have $T = p\,r$."

Navier's principle is also employed by Rankine for determination of the horizontal pressure exerted upon a quadrant of the circle in a direction perpendicular to that of the load. In other words, this pressure represents the horizontal crown thrust, and the process of reasoning is as follows:—The uniform normal pressure $p$, if not actually caused by the thrust of a fluid, is similar to fluid pressure; and it is equivalent to a pair of conjugate pressures in any two directions at right angles to each other, of equal intensity. For example, let $x$ be vertical,

* "Civil Engineering," pp. 185-202.

y horizontal, and let $p_x$, $p_y$, be the intensities of the vertical and horizontal pressures respectively; then

$$p_x = p_y = p;$$

and the same is true for any pair of rectangular pressures; and if P be the total vertical pressure, and H the total horizontal pressure, exerted upon one quadrant A B of the circle, we have

$$H = P = T = p r.$$

(4) When the load gives rise to a pair of conjugate thrusts at each point uniform in amount and direction but not equal to each other, the resulting curve is an ellipse, which is a parallel projection of a circle. Rankine demonstrates that "the intensity of the pressure in the direction of a given diameter is directly as that diameter and inversely as the conjugate diameter," and further that "the intensities of a pair of conjugate pressures are to each other as the squares of the conjugate diameters of the elliptic rib to which they are respectively parallel."

In actual practice it is seldom the case that the conditions of loading are precisely identical with those giving rise to an equilibrium curve of elliptical form, the nearest approach being exemplified by a tunnel or culvert, built so far beneath the surface of the ground that the depth is great compared with the height of the arch.

(5) When the load causes normal pressure at each point proportional, like that of a liquid in repose, to the depth below a given horizontal plane, the curve is termed a hydrostatic arch (see Fig. 31, p. 86).

It will be seen by comparing Fig. 31, p. 86, with the right hand diagram in Fig. 29 on the same page that the hydrostatic arch differs from a true semi-ellipse by being of somewhat flatter curvature at the crown and springing, and of a somewhat sharper curvature at the haunches. The application of the hydrostatic arch in practice is founded on the fact that "every arch, after having been built, subsides at the crown, and spreads, or tends to spread, at the haunches, which, therefore, press horizontally against the filling of the spandrels"; from which it is inferred that, if an arch be built of a figure suited to equilibrium under fluid pressure, it will probably spread horizontally and compress the masonry of the spandrels until the horizontal pressure at each point becomes of equal intensity to the vertical pressure, and therefore sufficient to keep the arch in equilibrium.*

(6) When the load gives rise to pressure consisting in a vertical plane of a pair of conjugate pressures, one vertical and proportional to the depth below a given horizontal or sloping plane, and the other parallel to the horizontal or sloping plane, and bearing to the vertical pressure a certain constant ratio, the result is the geostatic arch. An arch in dry earth or sand is an example of this condition of loading.

The geostatic arch varies in form, and may approximate to the circle on one hand or to the ellipse on the other. The geostatic curve can be produced by transformation from the hydrostatic curve, by increasing or decreasing one set of the conjugate ordinates without altering the other set.

Following his discussion of the foregoing curves, Rankine considers † the general proposition that "a linear arch or rib of any figure under a vertical load distributed in any manner being given, it is always possible to determine a system of horizontal or sloping pressures, which, being applied to that rib, will keep it in equilibrium." These last are called the *conjugate pressures*.

The only case discussed in detail is that in which the conjugate pressures are horizontal, and the load is symmetrically distributed on each side of the crown of the arch. In connexion with this case the following problems are stated and methods of solution are given:—

*Problem I.*—To find the total horizontal pressure against the rib below a given joint.

*Problem II.*—To find the thrust at the crown of the rib.

*Problem III.*—To find the mean intensity of the horizontal pressure required in a given layer of the spandrel.

*Problem IV.*—To find the greatest horizontal thrust, the point of rupture, and the angle of rupture.

*Problem V.*—To find the position of the resultant of the maximum horizontal thrust.

Several examples are given of the last-mentioned problem relating to catenarian, circular, hydrostatic, and elliptic arches.

The discussion to which we have referred is followed by some remarks upon the "Stability of Blocks" and the "Transformation of Blockwork Structures."

So far it will be seen that, while many interesting principles are enunciated, some of purely speculative and all of mathematical character, very little, if any, attempt is made by Rankine to show in what manner these principles may be applied by the designer in everyday practice.

We must turn for further elucidation to a later chapter in the same work,* where much valuable information is given, although it is not arranged in a particularly consecutive or helpful manner.

In order to apply Rankine's principles to arch design it is necessary to ascertain the vertical and horizontal forces acting upon the proposed arch. The vertical force acting upon any part is assumed to be the weight of the masonry, earth, or other load vertically over the part in question; and the horizontal pressure to be that given by the equation in a previous chapter.†

As expressed by Rankine, this equation is not intelligible without reference to an accompanying diagram, but it may be thus stated:—

$$p_x = w\,d\,\frac{1 - \sin\Phi}{1 + \text{s.n}\,\Phi}$$

where $p_x$ = the horizontal intensity at any point, $w$ = the unit weight of the earth, $d$ = the depth of earth over the point considered, and $\Phi$ = the angle of repose of the earth.

Using the same notation, the vertical intensity is

$$p_y = w\,d.$$

When the value and distribution of the vertical and horizontal forces have been determined, the equilibrium curve corresponding to the form of loading is adopted for the intrados of the proposed arch.

Rankine says that the exact form for the line of pressures on the sides and roof of a tunnel is the geostatic arch, and if the depth of the earth is great compared with the height of the buried archway, the proper form for the line of pressures is the elliptic linear rib. The intrados will then be an ellipse in which

$$\frac{\text{horizontal semi-axis}}{\text{vertical semi-axis}} = \sqrt{\frac{p_v}{p_x}} = \sqrt{\frac{1 - \sin\Phi}{1 + \sin\Phi}}$$

"If the earth is firm and little liable to be disturbed, the proportions of the half span or horizontal semi-axis to the rise or vertical semi-axis may be made greater than is given by the preceding equation, and the earth will still resist the additional horizontal thrust; but that proportion should never be made less than the value given by the equation, or the sides of the archway will be in danger of being forced inwards." ‡

Considering the relation between the linear rib and the intrados of a real arch, Rankine points out § that there are numerous cases in which the form of a linear rib suited to sustain a given load may at once be adopted for the intrados of a real arch for sustaining the same load with sufficient exactness for practical purposes. The following test may be applied to ascertain whether this method is applicable to any given case.

Let A C B, Fig. 57, be one half of the ideal rib which it is proposed to adopt as the intrados of a real arch. Draw A $a$ normal to the rib at the crown so as to represent a length not exceeding two-thirds of the intended depth of the keystone, and conceive a couple applied to the keystone consisting of tension at A equal and opposite to the thrust along the rib there, and of an equal thrust at $a$.

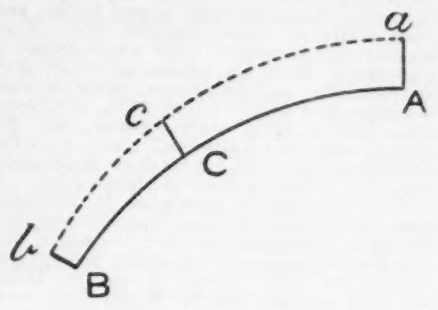


Fig. 57.

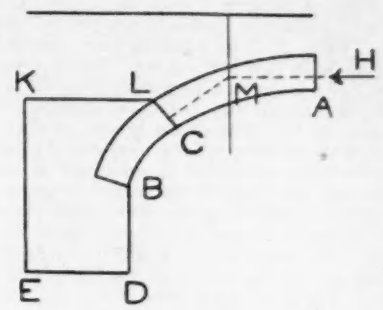


Fig. 58.

Draw a normal B $b$ at the springing and make

$$\frac{\text{B}\,b}{\text{A}\,a} = \frac{\text{thrust along rib at A}}{\text{thrust along rib at B}},$$

and conceive a couple of equal moment to the first, consisting of tension at B and thrust at $b$ to be applied at the springing. The pair of couples thus introduced do not alter the equilibrium, their only effect being to transfer the line of pressures from the intrados or ideal rib A C B to a line $a\,c\,b$ whose perpendicular distance C $c$ from the intrados at any point is inversely as the thrust along the rib at that point. Then if $a\,c\,b$ lies within the middle third of the arch ring the ideal rib A C B is of a suitable form for the intrados.

The method adopted by Rankine for determining the stability of any proposed arch is as follows:—

The first step is to assume a linear arch, parallel to the intrados of the proposed arch and loaded vertically with the same weight distributed in the same manner. The assumed linear arch is then to be treated according to the method, discussed in "Civil Engineering," p. 213, to which reference has been made above.

Then by the equation given for the solution of Problem III.,* determine either a general expression, or a series of values, of the intensity $p_y$ of the conjugate pressure, horizontal or oblique as the case may be, required to keep the arch in equilibrium under the given vertical load. If that pressure is nowhere negative, a curve similar to the assumed arch, drawn through the middle of the arch ring, will be exactly or very nearly the line of pressures of the proposed arch; $p_y$ will represent exactly or very nearly the intensity of the lateral pressure which the real arch will exert at each point against its spandrel and abutments; and the thrust along the linear arch at each point will be the thrust of the real arch at the corresponding joint.

On the other hand, if $p_y$ has some negative values for the assumed linear arch, there must be a pair of points in that arch where that quantity changes from positive to negative and is equal to nothing. The angle of rupture at that point is to be determined by solving Problem IV. The corresponding joints in the real arch are the joints of rupture, and below them conjugate pressure from without is required to sustain the arch, and, consequently, the backing must be built with squared side joints.

In Fig. 58 let B C A represent one half of a symmetrical arch, K L D E an abutment, and C the joint of rupture found by the method described. The point of rupture, which is the centre of resistance of the joint of rupture, is somewhere within the middle third of the depth of that joint; and from that point down to the springing joint B the line of pressures is a curve similar to the assumed linear arch and parallel to the intrados, being kept in equilibrium by the lateral pressure between the arch and its spandrel and abutment.

From the joint of rupture C to the crown A the figure of the true line of pressures is determined by the condition that it shall be a linear arch balanced under vertical forces only; that is to say, the horizontal component of the thrust along it at each point is a constant quantity, and equal to the horizontal component of the thrust along the arch at the joint of rupture. That horizontal thrust is to be found in solving Problem IV., mentioned above.

The only point in the line of pressures above the joints of rupture which it is important to determine is that at the crown of the arch A; and it is found in the following manner:—

Find the centre of gravity of the load between

* "Civil Engineering," p. 419. † *Ibid.* pp. 213-218.

* "Civil Engineering," pp. 413-436. † *Ibid.* p. 320. ‡ *Ibid.* p. 434. § *Ibid.* p. 417.

* $p_y = -\frac{d\,H}{d\,x} = -\frac{d}{d\,x}\left(P\,\frac{d\,y}{d\,x}\right)$.

the joint of rupture C and the crown A, and draw through that centre of gravity a vertical line. Then, if it be possible, from one point, such as M, in that vertical line to draw a pair of lines, one parallel to a tangent to the soffit at the joint of rupture and the other parallel to a tangent to the soffit of the crown, so that the form of those lines shall cut the joint of rupture, and the latter the keystone in a pair of points which are both within the middle third of the depth of the arch ring, the stability of the arch will be secured; and if the first point be the point of rupture, the second will be the centre of resistance at the crown of the arch and the crown of the true line of pressures.

When the pair of points related to each other as above do not fall at opposite limits of the middle third of the arch ring, their exact positions are to a small extent uncertain, but that uncertainty is of no consequence in practice. Their most probable positions are equidistant from the middle line of the arch ring.

Should the pair of points fall beyond the middle third of the arch ring, the depth of the arch stones must be increased.

## *GENERAL BUILDING NEWS.*

CHURCH, GRIMETHORPE, YORKSHIRE. — A new church, built on the slope rising from the Valley of the Dearne at Grimethorpe—a couple of miles south-east of Cudworth, and half a dozen miles from Barnsley—was consecrated on the 10th inst. The edifice is a building of brick and stone, with red roof and turret. The architect is Mr. Hodgson Fowler, of Durham.

BANKING PREMISES, YORK.—Alterations for Messrs. Barclay and Co. are being carried out at the corner of High Ousegate, Parliament-street. When the new premises are ready for occupation they will have a frontage of nearly 100 ft. to Parliament-street, with the main entrance in High Ousegate. Ruabon red pressed bricks are used for the most part, with Closeburn red stone and a plinth of granite. When the whole of the work is finished there will be a banking hall about 50 ft. by 40 ft., and the premises will be 56 ft. high from the flags to the coping. The bank and offices will be lighted throughout by electricity. Mr. Edmund Kirby, of Liverpool, is the architect, and Mr. T. P. Barry, of York, contractor.

CHURCH OF ST. PAUL, FAIRHAVEN.—Messrs. R. L. Lowe, Farnworth, ask us to mention that this church, the opening of which was recorded in our last issue, is laid with their patent wood-block flooring.

WESLEYAN CHURCH, SEVENOAKS. — The new Wesleyan Church at Sevenoaks, which has just been opened, has been built at a cost, including site and furnishing, of 7,000*l*. The church is situated on the summit of the Drive, overlooking the Holmesdale Valley. The building—cruciform in plan, with end gallery—is in the Early English style, freely treated. It has a tower and spire rising to a height of about 80 ft., faced with Kentish ragstone and Bath stone dressings. The church is capable of accommodating nearly 600 persons. Vestries are provided in the rear, with a church parlour, etc., for social purposes. The warming is on the low-pressure hot-water system. The plans were prepared by Mr. James Weir, architect, of Westminster, and the contractors were Messrs. Wm. Johnson and Co., Ltd., of Wandsworth Common.

WESLEYAN CHURCH, OKEHAMPTON.—The new Wesleyan Methodist Church and Sunday School at Okehampton were opened on the 1st inst. The church is situate in Fairview-place, and is of Gothic design. The seating accommodation is for 400. The school premises, including a large assembly hall and four class-rooms opening into it, are in the rear. Messrs. John Wills and Son, Derby, were the architects, and Mr. Henry Geen, Okehampton, the builder.

SCHOOL, NORTH HEATON. — The new public elementary school at Tosson-terrace, North Heaton, Newcastle, was opened on the 3rd inst. The school, which comprises three departments — boys, girls, and infants — provides accommodation for 1,330 children. The architect is Mr. S. D. Robins, of Newcastle and Sunderland; the contractor, Mr. Thomas Lumsden, of Jarrow; the hot-water engineers, Messrs. Dinning and Cooke; and the clerk of works, Mr. John S. Graham. The mixed school is of brick, with stone dressings, and the roof is slated with green American slates. The ground and first floor each contain a central hall 73 ft. by 31 ft., and seven class rooms, with accommodation for 476 scholars on each floor. Both floors to the central halls are in maple. Two cloak rooms and lavatories are provided to each school on each floor. The first floor is approached by a staircase at either end, the steps being Robinson's patent, supplied by the Metallic Paving and Artificial Stone Co., London. The cloak rooms and passages are lined with white glazed bricks, and finished with a patent moulded tile. Four masters' and mistresses' rooms are provided on a mezzanine floor. The infants' school is a one-story building, and contains on the ground floor a central hall 63 ft. 8 in. by 24 ft., and seven class rooms, with accommodation for 410 infants, also two mistresses' rooms and the necessary cloak room and lavatory accommodation. The whole school is heated by hot water. The plumbers are Messrs. W. Scott and Sons, of Newcastle and Jarrow; plasterer, Mr. Mitchell, of Shields and Jarrow; slater, Mr. Charles Nicholson, of Newcastle; painter and glazier, Mr. John Dixon, of Jarrow. Hardware has been supplied by Messrs Emley and Sons; the iron railing and gates by Messrs. Swinney, of Morpeth. The sanitary fittings have been supplied by Messrs. Adams, of Scotswood, and Messrs. Twyford. Gas fittings have been supplied by Messrs. Scott and Sons.

GOOD TEMPLARS' HALL, ARBROATH.—The new Good Templars' Hall, which is being erected at the corner of Reform-street and Hume-street, Arbroath, is now nearing completion. The new building consists of one hall, 58 ft. by 37 ft., seated for about 550 persons, and a lodge-room 33 ft. by 22ft. 6 in., with three ante-rooms. The architects are Messrs. Carver and Symon, under whose supervision the work has been carried out by the following contractors: Builders, Calder Brothers; joiner, R. C. Farquhar; plumber, George Rayne; slater, John Mitchell and Son; plasterers, Middleton and Donald; heating, T. R. Grant; glazier, D. J. Scott; painter, E. W. Mathewson; and the furniture has been supplied by the Bennet Furnishing Co., of Glasgow. The total cost of the work, including architects' fees, will be 1,400*l*.

BANK, DUNDEE.—A new branch Savings Bank is now in course of erection in the Hilltown district of Dundee. It is situated at the corner of Hilltown and Stirling street. The Bank offices form the main part of the building. They are situated on the ground floor, and measure 43 ft. by 30 ft. inside, including a strong room and a private room. In the basement are placed the heating chamber and the lavatory accommodation. Above the Bank there are two houses, one for the manager and the other for the caretaker. Messrs. Johnston and Baxter are the architects, and the various contractors are as follows:—Masons, A. and T. Craig; joiners, Charles Smith and Son; plumber, David Bremner; plasterer, James Laburn; slaters, Alexander and Thomson. Mr. P. C. Barron is clerk of works.

HOUSE-BUILDING IN LIVERPOOL. — The Liverpool City Building Surveyor, Mr. Goldstraw, has completed his annual report of the work of his department during the past year. Eight complete years have now elapsed since the extension of the city in 1895, and the new houses erected in each of the intervening years numbered as follows:—1895, 247; 1896, 1,199; 1897, 1,656; 1898, 1,977; 1899, 2,358; 1900, 1,573; 1901, 1,963; 1902, 2,061; and 1903, 2,453. It would thus be seen that the figures for the past year were 626 above the average of the previous seven years, showing an increase of 392 over those for the year 1902, and reaching the highest record of the eight years. The growth of the city might be observed from the new houses built in the separate divisions, which were indicated by the following figures:—Wavertree, 641; West Derby, 471; Walton, 432; Old City, 405 (including 263 labourers' dwellings erected by the Corporation); Garston, 299; Toxteth-park, 205. An extended comparison, however, comprising the last nine years, showed that the whole rate of growth had been much greater in Wavertree than in any other district. The entire number of houses built in the last nine years was 15,795. But 555 of these were built in the year 1895, before the extension of the city boundaries at the end of that year. Also 299 houses of the above total were built last year in the Garston district, since the later extension of the boundaries. To ascertain the relative growth of the city, year by year, only the figures for the years 1896 to 1902 inclusive, should be compared; and it might be noted that the houses built in these seven years between the two extensions of the city amounted to 12,787, whilst the number built in the eight years since the extension of 1895 amounted to 15,240. Taking all the houses (2,453) erected last year, the following were the percentages of rentals:—Houses of rental under 12*l*., 8·2 per cent.; from 12*l*. to 18*l*., 14·8 per cent.; from 18*l*. to 25*l*., 43·1 per cent.; from 25*l*. to 35*l*., 23·8; and from 35*l*. upwards, 5·1. The work of inspecting and dealing with dangerous buildings has been much heavier during 1903 than it had been for some time past, the number of notices in such cases for the past year having reached the high figure of 3,007. The number of summonses also showed a corresponding increase, while there was a considerable falling off in the number of "Contrary to regulation" notices. This seemed to be an indication that the steady enforcement of the building regulations had educated the ordinary builders up to a higher standard of construction and materials.

EXTENSION OF SHEFFIELD TOWN HALL.—The Improvement Committee of Sheffield City Council have considered plans and drawings prepared by Mr. E. W. Mountford, architect, for the proposed extension of the Town Hall, and an approximate estimate of the cost of such extension and other alterations to the present building, including the provision of cellerage for storage purposes, also of an electric passenger lift, urinal, and the execution of certain other work to make available parts of the present building at present inaccessible, amounting to 36,000*l*., exclusive of architect's commission, clerk of work's salary, furnishing, and cost of land, and the plans and drawings were ordered to be exhibited in the Council Chamber at the meeting of the Council.

MASONIC HALL, BROUGHSHANE, NEAR BELFAST. —The foundation-stone has just been laid of the new premises for the Broughshane Masonic Lodge 246. The architect of the new hall is Mr. Andrew Boyd, C.E., Ballymena. The new hall, the façade of which will be next the village street, will be 52 ft. by 23 ft., with an entrance on the ground floor. Besides a caretaker's residence there will be a store-room and some other apartments, and the lodge-room above will be 30 ft. by 20 ft. Adjoining this will be a refreshment-room.

PROPOSED NEW INFIRMARY AT SHOREHAM.—The Steyning Guardians had a proposal from the Works Committee before them at their meeting at Shoreham recently in regard to the erection of a new Infirmary at Shoreham Workhouse. Some of the details are:—Four infirmary pavilions of two floors, providing for sixty beds, 20,000*l*.; maternity ward, with beds for eight women, 2,000*l*.; nurses' home, with accommodation for thirty-two nurses, 5,500*l*.; small isolation hospital, 1,200*l*.; surgical block, including the dispensary and waiting-room, the operating-room, surgery and accessories, 1,200*l*.; walls, roads, etc., 1,200*l*.; padded rooms, 600*l*.; mortuary and post-mortem rooms, 250*l*. Other buildings on the Workhouse grounds also planned are the extension of tramp wards and married couples' quarters, with two rooms each for four couples. These will cost 60*l*. Mr. Singleton, Chairman of the Committee, said that the architect, Mr. Clayton had prepared plans, and these were submitted to the Local Government Board, whose official suggested a number of improvements in the scheme.—An amendment was proposed by Mr. J. Turton:—"That the rough estimate of the new Infirmary scheme, excluding the extension of tramp wards and married couples' quarters, be approved and referred back to the Works Committee with the request that they should consider the extent of the accommodation required for immediate purposes, both for patients and nurses, and report thereon to the Board at an early date."—The amendment was carried, with the approval of the Committee.

TRAMWAYS OFFICE, DERBY.—A new tramways office is being erected in Victoria-street, Derby. The building is of pressed bricks, with Hollington stone dressings, tiled roof, and mullioned windows. There is a dome on the top, of copper. On the ground floor is a waiting-room, and connected with this there is a retiring-room for ladies. There is a receiving office, where the conductors of cars will deliver the contents of their boxes, and a mess-room for the men to have their meals in. On this floor is a gentlemen's lavatory. There is a stone staircase at the Corn-market end of the building leading up to the committee-room, general manager's office, etc. Above are offices of similar size, and on the top floor are a suite of rooms for the use of the caretaker, etc. A lift from the basement to the upper rooms is provided, and the heating of the offices is carried out by means of radiators. Electric light is introduced into every room, and all the floors are fireproof. The architect is Mr. A. Macpherson, and the contractors for the work are Messrs Ford and Co.

ENLARGEMENT OF THE BUCKS COUNTY LUNATIC ASYLUM, STONE.—The new wings and other additions to the Bucks County Lunatic Asylum at Stone were opened recently. The Asylum has been enlarged so as to accommodate 115 female and 111 male patients, and 21 attendants. The additional accommodation for patients is provided by wings on either side of the existing building, heated by hot-water pipes and radiators, and ventilated by gratings opening into shafts connected with extractors on roof; the fresh air being admitted into rooms through radiators. The administrative block has been enlarged by the erection of a new bakehouse, the old bakehouse being annexed to the kitchen. Quarters for assistant medical officer and a surgery, and rooms for

kitchen staff, have also been added. The Recreation Hall has been enlarged, and is provided with a fitted-up stage and dressing-rooms. The chapel has been enlarged to accommodate 414 patients; the laundry has been added to and re-modelled, and a boiler-house, with an 80 ft. chimney shaft, has been erected. There is a water tower, containing two tanks of a capacity of 20,000 gallons, on land belonging to the County Council, adjoining their water supply at Willow Spring. New fire mains and hydrants have been provided in and outside the buildings. A new mortuary has been erected, and houses for the clerk and steward and engineer. The telephone has been laid on throughout the premises, as well as electrical tell-tales. The contracts entered into were:—General buildings, Messrs. W. Pattinson and Sons, Ruskington, Sleaford, 49,415*l.*; electric lighting, Messrs. Lea and Warren, Kettering, 5,053*l.*; telephones and tell-tales, Messrs. W. J. Furse and Co., Nottingham, 340*l.* 18*s.* The sub-contractors employed through Messrs. Pattinson included:—Laundry machinery, Messrs. Tullis and Co., Glasgow; steam boilers, Messrs. Yates and Thom, Blackburn; heating, Messrs. Duffield and Sons, Slough; water tanks, Messrs. Clayton, Sons, and Co., Hunslet; fire mains and hydrants, Messrs. Shand, Mason, and Co., London; padded-rooms, Messrs. Pocock Bros., London; steam oven, Mr. A. Hunt, Leicester; ventilation, Messrs. Kite and Co., London; boiler-house tanks, Messrs. R. and J. Dempster, Manchester; lightning conductors, Messrs. J. and W. Gray, London; locks, Mr. Gibbons, Wolverhampton; sanitary fittings, Messrs. Doulton and Co., Lambeth; plumbing, Messrs. H. Braithwaite and Co., Leeds; painting, Messrs Simms and Son, Leicester; wood block flooring, Messrs. Roger Lowe and Co., Farnworth; proscenium and stage fittings, Messrs De Jong and Mr. Julian Hicks, London. Mr. C. H. Riley was clerk of works for the undertaking. Mr. G. H. Blatherwick, Nottingham, was the quantity surveyor. Mr. Campbell-Swinton was the electrical engineer, Mr. Pierce representing him. The works were designed and directed by Mr. R. J. Thomas, the County Surveyor.

THE "POTTER" DWELLINGS, LIMEHOUSE.—These dwellings, which were opened last week, are erected on a portion of an area cleared pursuant to the provisions of the London (King John's Court, Limehouse) Improvement Scheme, 1897. The scheme provided for the erection on the cleared area of working-class dwellings for the accommodation of fifty-six persons; for the widening of Limehouse-causeway, from Three Colt-street to Gill-street, to a minimum width of 30 ft.; for the widening of Three Colt-street, opposite Nos. 109 to 117, to a width of 30 ft.; and for the stopping up and inclusion in the improvement area of King John's-court. Further provisions were contained for the erection of the dwellings by the local authority, unless, within one year from the time of the clearing of the area, such dwellings had been previously erected, and it was also provided that all lands on which dwellings were erected under the scheme, should be appropriated for the purpose of dwellings for the period of twenty-five years from the date of the erection. The dwellings were designed by the Borough Engineer (Mr. M. W. Jameson), and on April 15, 1903, the Council accepted the tender of Mr. A. E. Symes, of Stratford, whose price was 6,298*l.* The dwellings consist of two blocks of buildings, three stories high, one facing Limehouse-causeway, containing twelve two-roomed and three three-roomed tenements; and the other, facing Three Colt-street, containing three two-roomed and nine three-roomed tenements. The two-roomed tenements each contain a living-room, bed-room, scullery, and water-closet, and are to be let at a weekly rental of 7*s.*; and the three-roomed tenements, each containing a living-room, two bed-rooms, scullery, and water-closet, are to be let at 8*s.* 6*d.* weekly. Each tenement is self-contained and provided with a scullery containing copper, coal-box, sink, and draining-board. The walls are constructed of brickwork, and the partitions and floors of concrete, so that, with the exception of the roof and top floor ceiling, the buildings are fireproof. The vacant land at the end of the site facing Limehouse-causeway will be fenced round with a suitable wrought-iron railing and planted as a shrubbery.

NEW TOWN HALL, DARVEL, N.B.—A new town hall is to be erected on a site in Main-street, Darvel. The new building will have two halls, the main hall providing accommodation for 800 to 1,000 people, and the lesser hall for 200. Mr. T. H. Smith, of London, is the architect. The cost will be between 3,000*l.* and 4,000*l.*

MUNICIPAL DWELLINGS, MARYLEBONE.—The foundation-stone of the new municipal dwellings in John-street, Edgware-road, has just been laid. The site of the new buildings forms a parallelogram. It has a frontage of 107 ft. and a depth of 89 ft. At the back a courtyard has been left with an area of 4,986 ft., which will be used as a playground by the children of the tenants. The building will be seven stories in height, and will contain on the lower floors eighteen single-room tenements for old people. The five upper floors will contain two-room and three-room tenements, there being ninety-six rooms altogether. The building, which will be constructed of fire-resisting material, has been designed by Mr. H. B. Measures, and will be erected by Messrs. J. Chessum and Sons.

## *STAINED GLASS AND DECORATION.*

MEMORIAL WINDOW, LANCASTER.—A stained glass memorial window in memory of Colonel J. M. Gawne, who fell in the South African War, is to be erected in the new King's Own Memorial Chapel in the Parish Church, Lancaster. The new window will be placed in the apse, and will have for its subject the figures of King Alfred and St. Oswald, with the arms of the Gawne family and Manxland underneath. Messrs. Shrigley and Hunt, Lancaster, are the artists for the work.

## *APPOINTMENTS.*

SCHOOL BUILDINGS SURVEYOR, SURREY COUNTY COUNCIL.—Mr P. P. Story, chief engineering assistant in the offices of the City Surveyor of Manchester, has been appointed by the Education Committee of the Surrey County Council as their Surveyor of School Buildings.

## *SANITARY AND ENGINEERING NEWS.*

THE SUBWAY SYSTEM FOR UNDERGROUND WORKS, FALKIRK.—The Falkirk Town Council have just completed a scheme of improvement by cutting a new street through an old and narrow lane known as Lintriggs, and thus connecting the two principal thoroughfares of the town—High-street and Newmarket-street—and joining the latter street almost opposite the Municipal Buildings. The new street is 40 ft. wide. As the main pipes would necessarily come down through the new thoroughfare, it was considered a suitable opportunity for introducing a new method of accommodating these in a brick conduit measuring 6 ft. in height and 4 ft. in width. In this the main water and gas pipes, as well as the electric light and telephone cables, are placed. Between the main conduit and the properties on either side branch conduits have been laid, so as to admit of drawing in water and gas pipes, electric light, and telephone wires to the new properties. The house drainage is brought from the houses to manholes built in the footpaths, and these again are connected to the main sewer, which, for obvious reasons, is not placed in the main conduit. The latter is provided with openings at either end for access for taking down material and making repairs. The coverings of these manholes are open gratings, which admit of ample ventilation. This is the first time in Scotland that the subway system of accommodating underground works has been adopted. The work has been designed and carried through by Mr. David Ronald, C.E., Burgh Engineer.—*Scotsman.*

## *FOREIGN.*

FRANCE.—M. Carolus-Duran was on Saturday last duly elected a member of the Académie des Beaux-Arts in place of Gérôme, by twenty out of thirty-six votes. The new Academician was born at Lille in 1837, and was sent to Rome as a "pensionnaire" of the "Société des Sciences et Arts" of Lille. He was afterwards, at Paris, the pupil of Souchon. He subsequently visited Spain to study the works of "Velasquez, and on his return to France commenced the series of portraits which have established his reputation. Among the number may be specially named the "Femme au Gant," now in the Luxembourg; the portrait of Madame Croizette by the seaside, and those of Madame Vandal and of Emile de Girardin. He is the author also of a very dramatic picture, "L'Assassiné," which is in the museum at Lille; several good landscapes, an "Entombment," and a ceiling in the Louvre, "Gloria Mariæ Medici." M. Carolus-Duran is a Grand Officier of the Legion of Honour, and, in 1879, obtained the "médaille d'honneur" of the Salon.——This year twenty students have been admitted to the competition for the Prix de Rome in Architecture, instead of the usual ten. The subject is "A barracks for an infantry regiment."——M. Bassompierre-Sewrin has obtained the first prize in the competition opened by the Union Céramique et Chaufournière, of which he has been appointed architect.——A new iron railway bridge is to be erected over the Aisne, at Guignicourt.——M. Mercié has finished the model of the group to be placed in the Panthéon as a monument to the principal generals of the Revolution. He has received the commission to produce a second group commemorating the great orators of the Restoration, which was originally to have been executed by Dalou and Chapu.——The French Government are about to acquire, at a price of 3,790,000 francs, the Farnese Palace, in order to make use of it as the French Embassy.——We have to record the death of M. Gion, Honorary Architect of the City of Paris. He was a pupil of Questel, of Gilbert, and of Diet. Among his principal works are the churches of St. Parvis and of St. Waast, and various schools in Paris. He exhibited at the Salon, in 1866, a design for a church for Rambouillet, and executed important works of restoration for the Commission des Monuments Historiques, especially the tower of the cathedral at Pierrefonds and the ancient Abbey of Ourscamp. M. Gion was brother-in-law of Mr. Daumet, the well-known architect.——The death is also announced, at the age of 47, of the sculptor Felix Soulès, a former pupil of Jouffroy and of Falguière. He was author of various works of some importance — "L'Enlèvement d'Iphigénie," "Satyre et Bacchante," "Joueuse de boules," and the portrait statue of General Lamarque. M. Soulès was Chevalier of the Legion of Honour.

## *MISCELLANEOUS.*

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Frank S. Mayo, 11, Queen Victoria-street, E.C., has been appointed Sole London Agent for Messrs. Gibbs Brothers, Loughborough, for the sale of their red sand-faced and moulded bricks and concrete paving.

TRAMWAYS AND LIGHT RAILWAYS ASSOCIATION.—The annual dinner of this Association will take place in the Picture Galleries, Prince's Restaurant, Piccadilly, at 7.30 for 8.0 p.m. on Wednesday, April 13. The chair will be taken by the President of the Association.

THE FATAL FIRE IN THE CITY.—Dr. Waldo, the Coroner for the City of London, has sent us the verbatim report of his remarks to the jury at the inquest, which was briefly reported in our last. The Coroner, in summing up, said that safeguard against fire in administrative London was provided for under two Acts of Parliament—namely, the London Building Act of 1894 and the Factory and Workshop Act of 1878. Under the London Building Act protection against fire was insisted on by the London County Council only in houses where the height from the street level to the floor of the topmost story measured over 60 ft. This Act was not retrospective, and only applied to houses built since 1894. The jury would doubtless recognise, therefore, that the Act was an imperfect measure, since no provision was made as regards structural safeguards against fire in houses more than ten years old. In the City, with its narrow streets, courts, and alleys, an Act was especially needed which would apply to all buildings, no matter what their height or age, the purpose for which they were used, or whether they did or did not possess parapets. With regard to the Factory and Workshop Act, the London County Council insisted on certain safeguards against fire in such factories and workshops only where more than forty persons were employed. At the same time, it was true that by the Amending Act of 1901 (section 15) the Council were empowered to make by-laws providing for means of escape from fire in "any" factory or workshop, irrespective of the number of persons employed, or, in other words, where a less number than forty were employed. It appeared, however, in evidence that no safeguard against fire had been suggested, or existed, in the case of the workshop employing eleven girls which faced the seat of the fire in Duke's Head-passage. Such new clause appeared, therefore, up to the present time at least, to be a dead letter. The Coroner further said that, with the object of learning more about fires and their topography, he had personally visited on the spot the sites of some 150 City fires reported to him under the provisions of the City of London Fire Inquests Act during the year 1903. As a result of the experience thus gained he could with the greater confidence suggest what he had already suggested nearly two years ago on the occasion of the lamentable fire in Queen Victoria-street when ten young lives were lost. He (the Coroner) would now repeat, in the same words, what he had then given voice to—namely, 'A way in which the jury might help to bring about desirable changes would be to advise the City to obtain powers of regulating all buildings within the City under a special Act. In that way the City of London would be following its ancient traditions in protecting the safety

of citizens.' He (the Coroner) considered that the City should lead the way, make its own reasonable by-laws enforcing the provision of structural safeguards against fire in the City, and appoint its own inspectors. By so doing the City would, as it had already done with its special Fire Inquests Act, be setting an example to the rest of England and Wales.

COUNTY ASYLUM, COLNEY HATCH.—The new permanent buildings, for which the plans and designs are being prepared by the Asylum Engineer, at an estimated cost of from 60,000*l.* to 70,000*l.*, will provide for 310 patients, with staff, distributed over seven blocks. The old buildings were erected for the Justices of the Peace for the County of Middlesex in 1849-51 by Myers, contractor, after plans and designs by S. W. Daukes, who gained the first premium of 300*l.* in the competition; the second premium of 200*l.* was awarded to the designs, after the Tudor style, submitted by George Godwin and Harris as joint architects. Our journal of July 5, 1851, contains a bird's-eye view, and a plan of the principal floor of the Asylum as first built after Daukes's plans, which covered 4½ acres of the site. Extensive additions have been made since.

THE INSTITUTE OF ARCHITECTS AND L.C.C. DRAINAGE BY-LAWS.—The Metropolitan local governing authorities are in receipt of a circular letter from the Secretary of the Royal Institute of British Architects, stating that his council have had their attention drawn to the great cost and trouble involved in complying with the requirements of the London County Council drainage by-laws made in accordance with the provisions of the Metropolis Management Acts Amendment (By-laws) Act, 1899, in connexion with any but the smallest buildings, and that it appeared to be the case that, before a "person" is able to get sanitary work approved by a sanitary authority, he must submit duplicate plans showing "every floor of any building in connexion with which such pipes and drains are to be used, and the position, form, levels, and arrangements of the several parts of such building, including the roof thereof, and the size and position of every drain, manhole, gully, soil pipe, waste pipe, ventilating pipe, and rain-water pipe, and of any drain passing under such building, and the position of every bath, water-closet apparatus, slop-sink, urinal, lavatory-basin or apparatus, sink (not being a slop-sink), and trap in connexion with the foregoing" (clause 2), and also "shall show the positions of all windows and other openings into the building, and the height and position of all chimneys belonging to the building within a distance of 20 ft. from the open end of the soil pipe and ventilating pipe" (clause 3), and also submit a block plan showing the properties and streets adjoining. The Secretary goes on to state that his council are of opinion that this imposes a very onerous and unnecessary tax on either the owner, or the architect, or the contractor of a building in London, and that the expense becomes infinitely greater where a large existing building is having a new system of drainage constructed if By-law No. 2 is interpreted by the sanitary authority to mean that "necessary" plans are all the plans required by No. 1, as this would mean the measuring up of the whole of the old buildings and the preparations of complete sets of drawings for no other purpose than this sanitary requirement, as such drawings are not required for the carrying out of the works themselves. It is also noted that By-law 1, section No. 4, requires a complete specification of all sanitary and other matters, and, the letter urges, that if it be the intention of the authorities to add such an expense to the ever-increasing cost of building or drainage operations, which is always pressing heavily upon building owners, it will tend, in the case of old buildings, to induce the owners to postpone as long as possible the redraining of their premises. The Council of the Royal Institute submit that a block plan, as required by section 5, with the levels and gradients properly worked on, would show everything that is necessary, as this would give in effect the longitudinal sections of the drains, and that beyond such plan, a written description of the pipes and apparatus below and above ground, such as is necessary to enable a contractor to carry out the work, would be reasonable. In conclusion a hope is expressed that the Local Government Board, in conjunction with the London County Council and other authorities will see their way, in the interests of the building public, to modify the by-laws in the direction suggested.

SHEFFIELD ART CRAFTS GUILD.—A meeting of the members of the Sheffield Art Crafts Guild has just been held at the Building Trades Exchange, Cross Burgess-street, Sheffield, when a paper on leadwork was read by Mr. Hadfield. The Master, Mr. T. Swaffield Brown, presided. The paper was illustrated by lantern slides, showing old examples of the plumbers' craft in England and the Continent, and of ornamental plumbing works executed in Sheffield and elsewhere on buildings designed by the author during the past thirty-five years, most of them by Sheffield craftsmen. Mr. Hadfield congratulated the Guild on the compliment paid to their work in this city by Mr. C. H. Townsend when recently distributing prizes to the students of the Corporation Technical School of Arts. He was in entire sympathy with the sound and practical advice to the craftsmen which permeated the whole address. Mr. Townsend had urged the desirability of the designer and worker meeting now and again in friendly intercourse to discuss their common difficulties, and then arrive at solutions that met the claims of both. Mr Hadfield thought that art education in this country had hitherto failed to equip the craftsman equally with his French, German, or Italian comrade, and undoubtedly not with the marvellously-skilled craftsmen of the Middle Ages. It tended to stifle originality, and to lead him to lean too much on precedent. Allusion was made by the lecturer to the neglect of old building traditions by architects and others during the past century, which had resulted in the decadence of the lead-worker's "art and mystery." There were signs, however, that, with the opening of the new century, there would be a revival. The special qualifications of lead for building purposes were considered, and it was shown to be capable of artistic treatment, and to be suitable both for decorative purposes, as well as constructive. The process of manufacturing cast-lead sheets, now coming again into use, was described, and also allusion made to the great use of lead for roofing both in England and abroad from Anglo-Saxon times downwards. Mr. Hadfield read some interesting extracts from the fabric roll of York Minster, where the rates of wages, mode of carrying on the plumbing work, forms of contract with master plumbers in the XIVth and XVth centuries were minutely described. It was pointed out that the use of lead for rain-water piping and spouting in important buildings was true economy and in the interest of property owners in the long run. He expressed regret at the practice by house painters of painting external lead work. It was unnecessary and wasteful, and it was a source of disfigurement. Lead was an English metal, and preferable to other metals owing to its weather-resisting properties, and had been extensively used for statues and monumental vases in the old English garden. Such pieces of artistic craftsmanship in lead were now highly valued. Lead bore climatic influences better than bronze. It was also suitable for marble inlay, forming an imperishable material for monumental and pavement slabs, capable of highly artistic treatment.—*Sheffield Independent.*

BUILDING BY-LAWS, CARDIFF.—Attention was called by Mr. Roberts at a meeting of the Cardiff Council a few days ago to a report presented by the Borough Engineer on the building by-laws. Mr. Harpur stated that the builder was not required to serve notice for the inspection of any part of the work before covering the same up except the foundations and drains. He might, if he chose, leave the concreting or the site to any convenient time, and he might then lay down the concrete and place the floor upon it immediately without giving notice. It was stated that the by-laws of the Corporation had sent up the price of property 25 per cent., and people were prepared to pay the increased price, because they believed they were getting better-built houses than formerly. It was true that the inspector, if he found any work covered up so that he could not inspect it, could call upon the builder to cut into, open out, or lay bare the work sufficiently to enable him to satisfy himself of its condition, but Mr. Roberts questioned whether this was always done. He pointed out that in the year 1897-8 1,258 houses and shops were built, but the number went down to 185 in 1901-2, and rose again to 398 in 1902-3. There were six inspectors, and if they could do the work between 1892 and 1898, surely there were too many employed at the present time. If the work was well done he would not complain, but he knew it was not well done. He referred to a case where the floor was put down before the houses were built.—Alderman Mildon could not credit the last statement. If it were so, let them have the name of the builder.—Mr. Chappell said he knew of a case where the floors were put down before the walls of the houses were 2 ft. high.—Alderman Mildon: If there is such a case let us have the name. I cannot believe it.—Mr. Chappell said he would not give the name now, but when another case arose he intended to make a scene, builder or no builder. He was not going to be told he was not to be believed.—Mr. Roberts moved an amendment to the report, but the Mayor informed him that he was out of order. Mr. Harpur had reported upon the power of the Corporation under the by-laws, and the by-laws could not be altered.—Mr. Harpur: The by-laws were framed on the Local Government Board model, and you will not get them altered—Alderman Beavan: It took us twenty-five years to get them.—Mr. Veall moved an amendment, but that was also ruled out of order, and the minutes of the Public Works Committee were approved.—*Western Mail.*

PATENT SPRING CLEANING.—At a time of year when householders are confronted with the horrors of spring cleaning, the case of Dunn *v.* Holt will be read with interest. The appellant was in the employment of the British Vacuum Cleaner Company, and was summoned under section 54 of the Metropolitan Police Act, 1839, for wilfully causing an obstruction with the apparatus which was used in Trebovir-road from 10 a.m. to 5.30 p.m. on one day. The police magistrate found that the business purpose was reasonable, the time reasonable, and the time and space occupied not excessive, but he convicted because the process was experimental, and not an ordinary incident of every day life necessary for comfort. The Divisional Court set aside the conviction on the facts as found above, since no obstruction in fact had apparently occurred, and the user was found to have been reasonable.

## *CAPITAL AND LABOUR.*

PLASTERERS' STRIKE, WALSALL.—On the 10th inst. the plasterers engaged on the Walsall Town Hall, which is nearing completion, came out on strike, a dispute having existed several weeks. The Plasterers' Society claim that the men should have Leeds prices, a penny more than Walsall, but the sub-contractors, Messrs. B. Mountain and Son, of Leeds, refuse to pay more than the Walsall rates.

# Legal.

## BUILDING A CHURCH AT STONE.

At Staffordshire Assizes last week the suit of the Rev. John R. Line and others, of Stone, against Messrs. Lynam, Beckett, and Lynam, architects, Stoke, was heard in the Nisi Prius Court before Mr. Justice Ridley and a special jury. The action was to recover damages from the defendants (assessed on the pleadings at 300*l.*) on the ground of alleged negligence by the defendants as the architects engaged in the late re-erection of the nave, roof, and aisles of Christ Church, Stone. Mr. Arthur Powell, K.C., and Mr. B. C. Brough (instructed by Mr. H. Walters, Stone) were for the plaintiffs, and Mr. A. T. Lawrence, K.C., and Mr. Disturnal (retained by Messrs Paddock and Sons, Hanley) represented the defendants. The evidence showed that in 1896 the church authorities determined to have the church rebuilt, and defendant was employed to prepare plans, specifications, etc. The tender of a builder was accepted for the work, and plaintiffs alleged that, owing to the negligence of the defendant, the builder did not do his work properly, to such an extent that rain fell from the roof and draughts were very common. Defendant was written to about the matter, but nothing was done to remedy the roof of the church. At length the church authorities had to call in other architects, and it was found that the slates were not of the quality specified, or the tiles, and that the boards of the roof were not properly seasoned and were shrunk. Another builder was called in, and the plaintiffs now sued for the amount they had to pay him to put the church right. Defendant, it was alleged, gave the builder in the first instance a certificate showing that the work was properly done. Mr. A. T. Lawrence, K.C., addressed the jury on behalf of the defendants. He said that there was a necessity of keeping down expenditure. It was like a tailor, who had to cut his cloth according to the coat.—Mr. Justice Ridley, on this, remarked that in that case they had to imagine there was a coat to cut for. The plaintiffs' case was that they practically had no church because it was not habitable.—Mr. Lawrence resented this remark from the judge, but the latter said he begged Mr. Lawrence to continue his case.—Mr. Lawrence said the judge had said there was no church. It made it impossible to continue the case before him if he told the jury they had not even got a church.—The defence was that suitable materials were put in for the money, and that adequate supervision was given.—The jury found a verdict for plaintiffs, and assessed damages at 274*l.* less the counter-claim of 103*l.* for architects' fees.—The judge said no costs would be allowed on the counter-claim.—*Staffordshire Sentinel.*

## THE WOOD-PAVING LITIGATION.

In the King's Bench Division on the 11th inst. the hearing was concluded of the case of Alcott *v.* Millar's Karri and Jarrah Forests, Ltd., and Green, before Mr. Justice Grantham and a special jury.

The action was brought by the plaintiff, Mr. Edw. Alcott, a contractor, to recover damages from the defendants for alleged libel contained in a letter, dated May 14, 1902, and written by the defendant, W. L. Green, on behalf of the defendant company to the Marylebone Borough Council. The letter complained of ran as follows:—"We understand that your Council propose laying the roadway of Oxford-street with American red-gum blocks. We would very strongly recommend that, before deciding upon this, you should pay a visit of inspection to Piccadilly, Waterloo-place, Haymarket, and Whitehall, the roadways of which have been paved with American red gum only from six to eighteen months, and are now in a rotten condition. We venture to say that the result of such a visit would certainly remove from your mind any idea of using such material for roadways in your district.—We remain, yours truly, Millar's Karri and Jarrah Forests, Ltd. (Signed) Walter L. Green for Joint Managing Directors." The plaintiff's case was that the defendants had written this letter to prevent him getting the contract with the Marylebone Borough Council to pave Oxford-street, and that in consequence of the letter he had had to amend his contract and make a reduction in price, and allow 25 per cent. of the contract price to be retained by the Council as a guarantee of the sound quality of his wood. The defence pleaded was that the letter complained of was not libellous, that the statements contained in it were true in substance and in fact, and were fair comment upon a matter of public interest.

A great mass of evidence, technical and otherwise, was called, and in the result the jury awarded the plaintiff 250*l.* damages.

Judgment accordingly.

A stay of execution was granted on the defendants bringing the costs and damages into court.

The plaintiff conducted his case in person; Mr. Rufus Isaacs, K.C., Mr. C. F. Gill, K.C., and Mr. Chas. Mathews represented the defendant company; and Mr. Edw. Morten the defendant Green.

## ABOLITION OF OFFICE-SURVEYOR'S COMPENSATION.

Mr. Justice Buckley, sitting as an additional Judge of the King's Bench Division last week, delivered a considered judgment in the case of Livingstone *v.* the Mayor, etc., of Westminster, an action by the plaintiff for a declaration that he was entitled to a certain amount of compensation upon the abolition of his office of Surveyor by the defendants. The facts sufficiently appear from his Lordship's judgment.

His Lordship, in giving judgment, said that when the London Government Act of 1899 came into effect in 1900 the plaintiff was an existing officer of the Vestry of St. George's, Hanover-square, within section 30, sub-section 1, of that Act. Under the scheme the Westminster City Council, the successors of the Vestry, had power to agree with the plaintiff as an existing officer of the Vestry for a continuance of his office for a temporary period without prejudice to any right to compensation under the Act of 1899. The Act came into operation in November, 1900, and the Council, on January 31, 1901, passed a resolution for his temporary re-employment at a certain salary without prejudice to compensation for abolition of the office. On May 9, 1901, the Council resolved that his office be abolished as from May 31, 1901, and they asked him to send in his claim for compensation. Plaintiff did so. On August 1, 1901, the Council passed a resolution granting him an allowance of 518*l.*, and they now said that in sending in his claim, the plaintiff gave the particulars of salary and emoluments relating to a wrong period of five years, and that he was not entitled to the amount claimed. The Council said that, having regard to section 120, sub-section 2, the proper five years would have been the five years commencing before the passing of the Act of 1899. His Lordship did not agree. The Local Government Act of 1888 said it was not to be in respect of any particular period, but generally. If the plaintiff had selected the wrong five years the Council should have asked him for another return. But, having his claim, the Council assessed his compensation and passed the resolution on August 1. The first question he had to consider was whether that resolution was valid. The only grounds on which it was attacked was that the *maximum* sum for which it was rated, thirty-seven-sixtieths of the salary, and emoluments—viz., 841*l.*, of which 518*l.* was thirty-seven-sixtieths, was alleged to have been in excess of the salary and emoluments. The maximum was arrived at by Act of Parliament, and, having regard to the plaintiff's length of service, his *maximum* was thirty-seven-sixtieths of his salary and emoluments. The facts to be elucidated were to ascertain what the plaintiff's salary and emoluments were. The defendants contended that the question of fact viz., the amount of salary and emoluments was not one to be dealt with by the Council, but one for the Court to examine and determine, and if the Court found that 841*l.* was in excess of his salary and emoluments, the resolution of the Council was *ultra vires* and wholly void. In his Lordship's opinion that contention was not well founded. It was for the Council to determine the fact what the salary and emoluments amounted to, and if they considered it and arrived at a decision it was not competent for the Court to review that decision. The Council had a right of appeal to the Treasury. It was for the Council, and not for the Court, to say what was the amount of the salary and emoluments of the office abolished. The defendants' contention then on that point failed. It was for the Council or the Treasury, and not for the Court, to determine this question of fact. The question of *ultra vires* did not therefore arise. He thought that the resolution of August 1 was valid. It was next said that on November 20, 1902, the Council rescinded the resolution. The plaintiff said that the Council had no power to do so, and, in his Lordship's opinion, the plaintiff was right. It was therefore unnecessary to consider questions as to the meeting of November 20. In his opinion it was not for him to review the figure which the Council adopted. The plaintiff therefore succeeded, and the defendants would have to pay the costs of the action. There was a motion as to the Auditor surcharging the Council with the extra amount said to be granted, but the result of this decision was that that surcharge was wrong.

Judgment accordingly.

## PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

3,477 of 1903.—J. W. Brown: *Lifts, Hoists, and the like.*

This relates to lifts, hoists, and the like, according to which a closed hydraulic circuit is employed, in which the cage and approximately half the load are counterbalanced, and in which an electric motor serves to augment the pressure of water according to the duty required, either on an upward or a downward journey of the lift cage.

5,241 of 1903.—W. Simmons and H. S. Kingerlee: *Fire Economiser for Cooking Stoves and Ranges.*

This consists in the front bars of cooking ranges being so constructed that they can be raised up and made to slide in a groove at the side of the bar frame, thus forming the bottom grate for a shallow fire when the oven is not required for cooking purposes.

5,623 of 1903.—W. L. Brenthall: *Construction of Tables, Chairs, Bedsteads, and like Articles of Furniture.*

This invention consists in cutting a "V," or other suitable groove, out of any convenient portion of the leg and then mitreing the rails, or stretchers, at both ends, so that when brought together, mitre to mitre, the angle that they form fits closely into the groove provided in the leg. A bolt, or screw, or other suitable fastening is then passed through the leg and between the rails, or stretchers, at each corner, which is secured with a suitable stay, or corner block, and nut. When the bolt is tightened the rails are jammed firmly into the groove in the leg. The rails are then screwed to the top in the usual manner.

7,601 of 1903.—J. Green and W. Green and Co., Ltd.: *Cooking Ranges, and the like.*

A cooking range, or the like, consisting in the combination with a hood, comprising two side-wings of a lug on the inner wing extending beyond the hinge of the wing, a lug on the outer wing, and a link connecting the lugs.

8,593 of 1903.—S. Flavel, C. E. R. Terry, G. H. Walker, and S. R. Flavel: *Field Boilers, and like Cooking Apparatus.*

A portable field set of cooking apparatus, comprising a number of separate complete cooking apparatus, each consisting of a casing, boiler, furnace grate, and other necessary details, all so adapted that each series of articles may be nested together, and also so that the nested grates, with the other loose parts, may be placed within a small casing, the whole set of apparatus thus being made to occupy a minimum space to facilitate transport.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

8,739 of 1903.—L. J. Newton: *Fireplaces.*

According to this invention, a skeleton, or open frame, of box-like formation is employed, having outwardly projecting end flanges. This box-like frame is built in with the brickwork when constructing the fireplace, and takes the place of the ordinary brick relieving-arch, or stone, to carry the upper brickwork. The range, on being afterwards placed in position within the fireplace, can be set with facility, as the builder can get his head and hands through the box-like frame, whereby he is enabled to perform the work effectively and with comparative ease. After the range has been set, the open, or box-like frame, is filled in with bricks so as to form a solid lintel, and it will be understood that the bricks in the box-like frame may be quickly removed without having to destroy the setting of the fireplace when repairs are required.

10,025 of 1903.—Hoskins and Sewell, Ltd., and J. McEwan: *Jointed Stays, or Struts, for use in connexion with Settee-berths and other Folding Furniture.*

Jointed, or folding stays, or struts, for ships' berths and other folding furniture, which consists in rigidly securing the jointed stay members in their extended position by means of a locking-pin, stud, or projection, carried by one of the stay members at a point removed from the joint, or folding centre, and a corresponding gap, or recess, on the other member, the said locking device being adapted to be engaged with one another when the said stay members are brought into line, whilst the joint connexion between the folding members is made by a pin and slot, or equivalent arrangement, which admits of the engagement and disengagement of the locking devices by a relative movement.

20,765 of 1903.—C. F. Christon: *Heating and Cooking Apparatus.*

A heating and cooking apparatus, comprising a furnace and flue, a removable cooking-pan, or other like receptacle, located immediately over the furnace, a hollow removable cover covering the top of the receptacle, into which all steam and vapour from the receptacle rise, and a flue-pipe for carrying off the steam, or vapours, from the cover to the furnace flue, whereby steam and offensive vapours are got rid of expeditiously instead of filling the apartment.

23,620 of 1903.—F. A. Murray and C. A. Murray: *An Adjustable Shooting-board to be used in connexion with Carpentry Work.*

This device consists of two rectangular wooden uprights of any width, or height, placed at any distance apart at right angles to, and flush with, the shooting edge of a shooting-board. These are connected by a base, and extend any width to the shooting edge. Between these two uprights a tilting table, having one of its longitudinal edges rounded, is so hung on pivots driven through the rectangular uprights that the rounded edge is flush with the shooting edge of the board. With the pivots as centres, slotted arcs are provided in the two uprights at convenient radius, so that when the tilting-table is moved on the pivots, a constant edge is presented to the plane used for bevelling. This tilting-table is clamped at different angles by means of screws, or fasteners, travelling in the slotted arcs aforesaid. A slot is cut through the centre of the tilting-table parallel with the shooting edge and to within a short distance of each end, which slot carries travelling bolts, to which are attached two slotted blocks of any dimensions, which, being thus slotted, will clamp the work to be planed in any position desired.

1,091 of 1904.—C. R. Catchpool: *Manufacture of Fixing, or Nailing, Bricks and Blocks.*

A method of making porous bricks, or the like, by mixing and grinding together in a perforated grinding pan shale, or other suitable brick-making material, combined with preferably about 25 per cent. to 50 per cent. of a highly inflammable material, such as sawdust, or the like, conveying the mixture which passes through the perforated bottom of the grinding-pan to a mixing machine, where water is added to render the mass sufficiently plastic, and forming it into bricks, or blocks, by means of any suitable brick-making machine, or by hand moulding.

1,275 of 1904.—F. W. Mellows: *Roof Glazing.*

According to this invention, each glazing bar is provided with a cleat, or the like, preferably bolted to its underside, and so shaped as to be adapted to clamp a portion of the roof purlin to which the glazing bar is to be secured between the latter and itself. These cleats are preferably attached in the required positions to the glazing bars in the shop where the latter are made so that the glazing bars may be quickly and easily secured in position to the roof purlins, and so that the minimum amount of work is necessary on the roof.

1,315 of 1904.—W. A. HILDYARD: *Bolts, or Fasteners for Doors, Windows, and the like.*

This consists in constructing bolts, or fasteners, for doors, windows, and the like in such a manner that they are automatically shot and locked, that they cannot lock accidentally, and that the shoot cannot be forced back from the outside.

9,455A of 1903.—G. DALTON: *Combinations of Stone or Ore Crushers, Elevators, and Screeners.*

This consists in the combination and construction of a travelling, or wheeled, platform carrying a stone-breaker or ore-crusher mounted longitudinally thereon, a bucket elevator, having the shafts of its lower and upper drums placed longitudinally with respect to said platform, a discharge shoot delivering broken, or crushed, material from the jaws of the breaker, or crusher, to the interior of the bottom, or receiving drum, of the elevator, and a screening drum placed longitudinally and forming a continuation of the upper drum of said elvator.

1,103 of 1904.—M. FAWCETT: *Construction of Fireproof Floors, Ceilings, and Roofs.*

The construction of fireproof floors, ceilings, and roofs in combination with concrete, either alone or with lintels, and iron or steel joists, having lower flanges of larger sectional area than the upper flanges.


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## SOME RECENT SALES OF PROPERTY:

### ESTATE EXCHANGE REPORT.

March 2.—By KEMSLEYS' (at Braintree).

| | |
|---|---|
| Felstead, Essex.—"Hick's Farm," 48 a. 2 r. 28 p., f. and c. | £520 |
| "Upper Kay's Farm," 35 a. 0 r. 17 p., f. and c. | 750 |
| Seven enclosures, 48 a. 0 r. 21 p., f. and c. | 606 |

By March 3.—C. F. MOORE (at Cheltenham).

| | |
|---|---|
| Withington, Glos.—A freehold farm, 85 acres. | 1,375 |
| "Hadden House" and two cottages, *f.* | 260 |
| "Coats Close," 2½ acres, *f.* | 100 |
| "Compton Hill Ground," 15 acres, *f.* | 210 |
| "Sheppy Farm," 60 acres, c., subject to a life aged 69. | 260 |

By T. S. PLOMMER (at Woolwich).

| | |
|---|---|
| Plumstead, Kent.—218 to 230 (even), High-st., f., w.r. 146*l.* 4s. | 2,000 |

March 7.—By B. BAILEY & Co.

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|---|---|
| Ilford.—1, Adelaide-ter., area 2,175 ft., f., p. | 720 |

By WM. HOUGHTON.

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|---|---|
| Clapton.—3, Goulton-rd., f., e.r. 60*l.* | 900 |

By ROBSON & PERRIN.

| | |
|---|---|
| Holloway.—28, Benwell-rd., u.t. 59½ yrs., g.r. 8*l.*, y.r. 36*l.* | 395 |
| Dalston.—14, Colveston-cres., u.t. 52 yrs., g.r. 7*l.*, y.r. 46*l.* | 380 |

By STICKLAND & HART.

| | |
|---|---|
| Norwood.—4, Anerley-gr., u.t. 50 yrs., g.r. 8*l.*, y.r. 37*l.* 14s. | 195 |
| 26, Whiteley-rd., u.t. 62½ yrs., g.r. 6*l.*, y.r. 30*l.* | 270 |
| 46, 46a, 48, 48a, 50, and 50a, Rothschild-st., u.t. 95 yrs., g.r. 24*l.*, w.r. 163*l.* 16s. | 1,200 |
| Dulwich.—28, Park-rd., u.t. 55½ yrs., g.r. 10*l.*, y.r. 45*l.* | 390 |

By WALTER VINCENT.

| | |
|---|---|
| Harrow, Middlesex.—16, Butler-rd., u.t. 94 yrs., g.r. 10*l.*, y.r. 65*l.* | 550 |

By T. LAVINGTON (at Swindon).

| | |
|---|---|
| Ogbourne St. George, Wilts.—"South End Farm" (or "Hallams"), 164 a. 2 r. 18 p., f., p. | 1,660 |
| Seven freehold tenements and 0 a. 1 r. 16 p. | 100 |
| Residence, tenement, and 0 a. 0 r. 16 p., u.t. 103 yrs., g.r. nil | 150 |
| Enclosure of land, 7 a. 2 r. 9 p., f. | 260 |

March 8.—By LEOPOLD FARMER & SONS.

| | |
|---|---|
| Kilburn.—304, High-rd, (s.), u.t. 78½ yrs., g.r. 35*l.*, y.r. 250*l.* | 3,320 |
| 17, Brondesbury-rd., u.t. 56 yrs., g.r. 13*l.*, e.r. 70*l.* | 575 |

By ROGERS, CHAPMAN, & THOMAS.

| | |
|---|---|
| Pimlico.—38, 44, and 46, Belgrave-rd., u.t. 21½ yrs., g.r. 30*l.*, y.r. 380*l.* | 3,240 |
| 73, Denbigh-st., u.t. 27½ yrs., g.r. 8*l.*, e.r. 75*l.* | 585 |
| Brompton.—110, Ifield-rd., u.t. 62½ yrs., g.r. 7*l.* 10s., p. | 340 |

By BOYTON, SONS, & BUCKMASTER (at Fulham).

| | |
|---|---|
| Fulham.—16, Peterborough-rd., f., w.r. 54*l.* 12s. | 375 |
| 52, Britannia-rd., u.t. 52½ yrs., g.r. 5*l.*, y.r. 43*l.* | 380 |

By S. WALKER & SONS (at Brentford).

| | |
|---|---|
| Brentford, Middlesex.—73, 74, and 75, High-st., with stabling in rear, area 3,850 ft., f., y.r. 30*l.* | 550 |
| 255, High-st., and "One Tun Yard," area 6,450 ft., f., y.r. 15*l.* | 520 |

By J. C. PLATT (at Hammersmith).

| | |
|---|---|
| Shepherd's Bush.—89 and 91, Becklow-rd., u.t. 74 yrs., g.r. 10*l.* 10s., w.r. 59*l.* 16s. | 410 |

March 9.—By H. J. BROMLEY.

| | |
|---|---|
| Forest Hill.—33, Kilmorie-rd., f., e.r. 38*l.* | £525 |

By FRITH, GARLAND, & Co.

| | |
|---|---|
| Harringay.—61, Pemberton-rd., u.t. 89¼ yrs., g.r. 6*l.* 10s., y.r. 36*l.* | 375 |

By HAROLD GRIFFIN.

| | |
|---|---|
| Battersea.—15, 17, and 19, Stockwood-st., u.t. 62 yrs., g.r. 12*l.*, w.r. 66*l.* 6s. | 450 |
| 22 and 23, Warsill-st., u.t. 61 yrs., g.r. 9*l.*, w.r. 71*l.* 10s. | 500 |

By E. & S. SMITH.

| | |
|---|---|
| Clerkenwell.—7 and 15, Baker-st., and 28a, St. Helena-pl., u.t. 7¼ yrs., g.r. 9*l.* 13s. 4d., y.r. 104*l.* 16s. | 230 |
| Fortis Green.—5, Cheapside (s.), u.t. 93¼ yrs., g.r. 15*l.*, e.r. 55*l.* | 300 |
| Brockley.—36, Adelaide-rd., u.t. 61¼ yrs., g.r. 8*l.*, e.r. 42*l.* | 375 |
| Notting Hill.—57, Blenheim-cres., u.t. 58 yrs., g.r. 12*l.* 2s., y.r. 52*l.* 2s. | 435 |

By WAGSTAFF & SONS.

| | |
|---|---|
| Canonbury.—12, Marquess-rd., u.t. 41¼ yrs., g.r. 10*l.*, e.r. 56*l.* | 510 |

By WYATT & SONS (at Chichester).

| | |
|---|---|
| Chichester, Sussex.—30, Westhampnett-rd., also mason's and builder's yard, and plot of land, part freehold and part long leasehold, p. | 820 |
| 1 and 2, St. James'-rd., f., y.r. 22*l.* 16s. | 335 |
| 10, Franklin-pl., f., y.r. 10*l.* 16s. | 170 |
| Hunston, Sussex.—Freehold cottage, y.r. 11*l.* 14s. | 160 |

March 10.—By BISLEY & Sons.

| | |
|---|---|
| Stratford.—12, Cruickshank-rd. (s.), f., y r. 36*l.* | 415 |
| Rotherhithe.—602, Rotherhithe-st., f., w.r. 26*l.* | 280 |

By CHESTERTON & SONS.

| | |
|---|---|
| West Kensington.—23 to 29 (odd), Gunterstone-rd., u.t. 73 yrs., g.r. 44*l.*, y.r. 230*l.* | 2,170 |
| Chiswick.—341, Chiswick High-rd. (s.), u.t. 75¼ yrs., g.r. 15*l.*, y.r. 80*l.* | 1,070 |

By CRASKE & SONS.

| | |
|---|---|
| Manor Park.—21, Albany-rd., u.t. 72½ yrs., g.r. 3*l.* 16s., q.r. 23*l.* | 215 |

By FAREBROTHER, ELLIS, & Co.

| | |
|---|---|
| Walthamstow.—The Marshes, five pieces of freehold grazing land, 5 a. 1 r. 20 p. | 450 |

By HAMPTON & SONS.

| | |
|---|---|
| Finchley.—Granville-rd., "Holdenhurst," and block of building land, 13 acres, f. | 11,480 |
| Granville-rd., plot of building land, 0 a. 1 r., f. | 600 |
| Lingfield, Surrey.—Two freehold cottages and 0 a. 1r. 36 p. | 270 |

By HAMILTON, MIALL, & Co.

| | |
|---|---|
| Kensington.—29, Maclise-rd. (laundry), beneficial lease for 20 yrs., y.r. 70*l.*, with goodwill, plant, etc. | 210 |
| Shepherd's Bush.—1 and 3, Uxbridge-rd., profit rental of 88*l.* 18s., u.t. 10 and 12 yrs. | 255 |

By NEWBON, EDWARDS, & SHEPHARD.

| | |
|---|---|
| Victoria Park.—76, 78, and 80, White Post-la., u.t. 56 yrs., g.r. 9*l.*, w.r. 93*l.* 12s. | 495 |
| Somers Town.—47, 48, and 49, Clarendon-st., u.t. 26½ yrs., g.r. 30*l.*, w.r. 102*l.* 18s. | 400 |
| 61 and 62, Clarendon-st., w.r. 91*l.*; also i.g.r. 10*l.*, u.t. 10¾ yrs., g.r. 30*l.* | 140 |
| Tottenham.—30 to 40 (even), Montague-rd., u.t. 66 yrs., g.r. 23*l.* 5s., w.r. 163*l.* 16s. | 870 |
| Ball's Pond.—20 to 28 (even), King Henry's-walk, f., w.r. 161*l.* 4s. | 1,640 |
| Holloway.—61, Cornwallis-rd., u.t. 51 yrs., g.r. 5*l.* 5s., y.r. 30*l.* | 300 |

By STIMSON & SONS.

| | |
|---|---|
| Walworth.—277, Walworth-rd., and 2, 4, 6, and 8, East-st. (s.), f., y.r. 200*l.* | 4,100 |
| 279 to 295 (odd), Walworth-rd. (s.); also 1, Walworth-pl., f., y.r. 745*l.* | 15,425 |
| Walworth-rd., "Sir William Walworth," p.h., f.g.r. 150*l.*, reversion in 29 yrs. | 5,850 |
| 301 to 309 (odd), Walworth-rd. (s.), f., y.r. 395*l.* | 8,000 |
| Walworth-pl., f.g.r. 33*l.*, reversion in 59 yrs. | 925 |

By G. A. MCDOWALL (at Stratford).

| | |
|---|---|
| Plaistow.—31, 33, and 35, Gordon-st., f., w.r. 68*l.* 18s. | 530 |
| 48 and 50, Grange-rd., f., w.r. 36*l.* 8s. | 300 |
| 1, Meredith-st., f., w.r. 19*l.* 10s. | 160 |
| 35, Cecil-rd., f., y.r. 32*l.* | 365 |

March 11.—By PRICE, ARROW, & TAYLOR.

| | |
|---|---|
| Battersea.—22, Winstanley-rd., u.t. 60¼ yrs., g.r. 6*l.*, w.r. 33*l.* 16s. | 195 |

By WILLIS, CROUCH, & LEE.

| | |
|---|---|
| Ealing.—Windmill-rd., "Oak Villa" and "Ash Villa," u.t. 72 yrs., g.r. 15*l.*, y.r. 56*l.* | 480 |

By WINDRUM & CLEAVE.

| | |
|---|---|
| Plaistow.—2, Lower-rd., u.t. 74 yrs., g.r. 5*l.*, w.r. 31*l.* 4s. | 250 |

***Contractions used in these lists.***—**F.g.r.** for freehold ground-rent; **l.g.r.** for leasehold ground-rent; **i.g.r.** for improved ground-rent; **g.r.** for ground-rent; **r.** for rent; **f.** for freehold; **c.** for copyhold; **l.** for leasehold; **p.** for possession; **e.r.** for estimated rental; **w.r.** for weekly rental; **q.r.** for quarterly rental; **y.r.** for yearly rental; **u.t.** for unexpired term; **p.a.** for per annum; **yrs.** for years; **la.** for lane; **st.** for street; **rd.** for road; **sq.** for square; **pl.** for place; **ter.** for terrace; **cres.** for crescent; **av.** for avenue; **gdns.** for gardens; **yd.** for yard; **gr.** for grove; **b.h.** for beer-house; **p.h.** for public-house; **o.** for offices; **s.** for shops; **ct.** for court.

## MEETINGS.

### FRIDAY, MARCH 18.

*Institution of Mechanical Engineers.*—M. Edouard Sauvage on "Compound Locomotives in France." 8 p.m.

*Sanitary Institute (Lectures for Sanitary Officers).*—Mr. W. C. Tyndale on "House Drainage." 7 p.m.

### SATURDAY, MARCH 19.

*Architectural Association.*—Fifth spring visit, to the Belgrave Hospital for Children, Clapham-road, by permission of Mr. H. P. Adams.

*Royal Institution.*—The Right Hon. Lord Rayleigh, M.A., on "The Life and Work of Stokes," V. 3 p.m.

*London Association of Correctors of the Press.*—Jubilee Dinner, Grand Hall, Hotel Cecil, The Right Hon. Viscount Goschen, P.C., in the chair. 6.30 p.m.

*Sanitary Institute (Demonstrations for Sanitary Officers).*—Inspection at Morden Hall Dairy Farm, Morden, Surrey. 3 p.m.

*Junior Institution of Engineers.*—Conversazione at the Westminster Palace Hotel. 7 p.m.

*Institute of Sanitary Engineers, Ltd.*—Visit to the new buildings of the Prudential Assurance Co., Ltd., Holborn Bars, London, W.C. 3 p.m.

### MONDAY, MARCH 21.

*Surveyors' Institution.*—Discussion on the paper recently read by Mr. H. J. Elwes, F.R.S., entitled "British Timber and its Uses." 4 p.m.

*Regent-street Polytechnic (University Extension Lectures).*—Professor Vivian Lewes on "The Chemistry of Air, Fire, and Water," VIII. 8 p.m.

*Society of Arts (Cantor Lectures).*—Mr. Bertram Blount, F.I.C., on "Recent Advances in Electro Chemistry," III. 8 p.m.

*Sanitary Institute (Lectures for Sanitary Officers).*—Mr. J. E. Worth on "Water Supply, Sources of Supply, and Distribution." 7 p.m.

*Liverpool Architectural Society.*—Mr. Hastwell Grayson, M.A., on "The Domestic Flue."

### TUESDAY, MARCH 22.

*Institution of Civil Engineers.*—Papers to be further discussed: (1) "The Use of Cement Grout at the Delta Barrage in Egypt," by Sir R. Hanbury Brown, K.C.M.G., M.Inst.C.E.; and (2) "The Barrage Across the Nile at Asyut," by Mr. G. H. Stephens, C.M.G. Time permitting, Papers to be read: (1) "Lowering the Sill of the Ramsden Dock, Barrow-in-Furness," by Mr. Leopold Halliday Savile; and (2) "Burntisland Harbour: Construction of the East Dock," by Mr. R. Henderson. 8 p.m.

*Architectural Association Camera and Cycling Club.*—Mr. F. R. Taylor on "The Excursions of the A.A. Camera and Cycling Club in 1903." 7.30 p.m.

### WEDNESDAY, MARCH 23.

*Society of Arts.*—Mr. T. Brice Phillips on "The Rural Housing Question." 8 p.m.

*Builders' Foremen and Clerks of Works' Institution.*—Quarterly Meeting of the Directors. 8 p.m.

*Sanitary Institute (Lectures and Demonstrations for Sanitary Officers).*—(1) Inspection in the district of Hackney. (2) Mr. J. E. Worth on "Sewerage." 7 p.m.

*Institute of Sanitary Engineers, Ltd.*—Extraordinary General Meeting, 4.30 p.m. Council Meeting, 6 p.m.

*St. Paul's Ecclesiological Society.*—Mr. G. C. Druce on "Painting and Sculpture in the Roman Catacombs," illustrated by limelight views. 8 p.m.

### THURSDAY, MARCH 24.

*Carpenters' Hall (Free Lectures on Matters Connected with Building).*—Mr. Basil Mott on "Development of Methods of Locomotion." 8 p.m.

*Leeds and Yorkshire Architectural Society.*—(1) Mr. J. Starkie Gardner, F.S.A., on "Architecture in Lead." (2) Election of Officers and Exhibition of R.I.B.A. Prize Drawings. 6.30 p.m.

*Institution of Electrical Engineers.*—Mr. K. Edgcumbe and Mr. F. Punga on "Direct Reading Measuring Instruments for Switchboard Use." 8 p.m.

### FRIDAY, MARCH 25.

*Institution of Civil Engineers (Students' Meeting).*—Mr. J. M. Kennedy on "The Relative Advantages of Continuous and Alternating Current for Traction Purposes." 8 p.m.

*Royal Institution.*—Professor Dewar on "Liquid Hydrogen Calorimetry." 9 p.m.

*Sanitary Institute (Lectures for Sanitary Officers).*—Mr. J. E. Worth on "Sewage Disposal." 7 p.m.

*Glasgow Architectural Craftsmen's Society.*—Mr. W. H. Baxter on "Some Woodworking Tools and their Economic Working." 8 p.m.

### SATURDAY, MARCH 26.

*Sanitary Institute (Sessional Meeting).*—Mr. W. E. Riley, Architect to the L.C.C., on "Municipal Re-Housing." 11 a.m. Visit in the afternoon to L.C.C. dwellings.

*Royal Institution.*—Right Hon. Lord Rayleigh, M.A., on "The Life and Work of Stokes," VI. 3 p.m.

*Sanitary Institute (Demonstrations for Sanitary Officers).*—Inspection at the Sewage Outfall Works, Barking. 3 p.m.

*Edinburgh Architectural Association.*—Visit to Gothic Ironworks, Falkirk.

## TO CORRESPONDENTS.

W. G.—J. B. W. (Below our limit).—N. C. H.—J. P.—P. W. (Amounts should have been stated).—G. W. (We do not insert lists of tenders when amounts are not stated, unless the work is carried out at a schedule of prices).

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# PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and Quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

## BRICKS, &c.

| | £ s. d. | |
|---|---|---|
| Hard Stocks | 1 16 0 | per 1000 alongside, in river. |
| Rough Stocks and Grizzles | 1 13 0 | " " " |
| Facing Stocks | 2 12 0 | " " " |
| Shippers | 2 10 0 | " " " |
| Flettons | 1 10 0 | " at railway depôt. |
| Red Wire Cuts | 1 13 0 | " " " |
| Best Fareham Red | 3 12 0 | " " " |
| Best Red Pressed Ruabon Facing | 5 0 0 | " " " |
| Best Blue Pressed Staffordshire | 4 4 0 | " " " |
| Do. Bullnose | 4 10 0 | " " " |
| Best Stourbridge Fire Bricks | 4 8 0 | " " " |
| GLAZED BRICKS. | | |
| Best White and Ivory Glazed Stretchers | 13 0 0 | " " " |
| Headers | 12 0 0 | " " " |
| Quoins, Bullnose, and Flats | 17 0 0 | " " " |
| Double Stretchers | 19 0 0 | " " " |
| Double Headers | 16 0 0 | " " " |
| One Side and two Ends | 19 0 0 | " " " |
| Two Sides and one End | 20 0 0 | " " " |
| Splays, Chamferred, Squints | 20 0 0 | " " " |
| Best Dipped Salt Glazed Stretchers, and Header | 12 0 0 | " " " |
| Quoins, Bullnose, and Flats | 14 0 0 | " " " |
| Double Stretchers | 15 0 0 | " " " |
| Double Headers | 14 0 0 | " " " |
| One Side and two Ends | 15 0 0 | " " " |
| Two Sides and one End | 15 0 0 | " " " |
| Splays, Chamferred, Squints | 14 0 0 | " " " |
| Second Quality, White and Dipped Salt Glazed | 2 0 0 | " less than best. |

| | s. d. | |
|---|---|---|
| Thames and Pit Sand | 7 3 | per yard, delivered. |
| Thames Ballast | 6 0 | " " |
| Best Portland Cement | 30 0 | per ton, " |
| Best Ground Blue Lias Lime | 21 0 | " " |

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 6d. per ton at rly. dpt.

## STONE.

| | s. d. | |
|---|---|---|
| BATH STONE—delivered on road waggons, Paddington Depôt | 1 6½ | per ft. cube. |
| Do. do. delivered on road waggons, Nine Elms Depôt | 1 8½ | " " |
| PORTLAND STONE (20 ft. average)—Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf | 2 1 | " " |
| White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf | 2 2½ | " " |
| Ancaster in blocks | 1 11 | per ft. cube, deld. rly. depôt. |
| Beer " | 1 6 | " " |
| Greenshill " | 1 10 | " " |
| Darley Dale in blocks | 2 4 | " " |
| Red Corsehill " | 2 5 | " " |
| Closeburn Red Freestone | 2 0 | " " |
| Red Mansfield " | 2 4 | " " |

YORK STONE—*Robin Hood Quality.*

| | s. d. | |
|---|---|---|
| Scappled random blocks | 2 10 | per ft. cube, deld. rly. depôt. |
| 6 in. sawn two sides landings to sizes (under 40 ft. super.) | 2 3 | per foot super. " |
| 6 in. rubbed two sides ditto, ditto | 2 6 | " " |
| 3 in. sawn two sides slabs (random sizes) | 0 11½ | " " |
| 2 in. to 2½ in. sawn one side slabs (random sizes) | 0 7½ | " " |
| 1½ in. to 2 in. ditto, ditto | 0 6 | " " |
| HARD YORK— | | |
| Scappled random blocks | 3 0 | per ft. cube " |
| 6 in. sawn two sides, landings to sizes (under 40 ft. super.) | 2 8 | per ft. super. " |
| 6 in. rubbed two sides Ditto | 3 0 | " " |
| 3 in. sawn two sides (slabs random sizes) | 1 2 | " " |
| 2 in. self-faced random flags | 0 5 | " " |
| Hopton Wood (Hard Bed) in blocks | 2 3 | per ft. cube. |
| " " " 6 in. sawn both sides landings | 2 7 | deld. rly. depôt per ft. super. |
| " " " 3 in. do. | 1 2½ | deld. rly. depôt " " |

## SLATES.

| in. in. | £ s. d. | |
|---|---|---|
| 20 x 10 best blue Bangor | 13 2 6 | per 1000 of 1200 at r. d. |
| 20 x 12 " | 13 17 6 | " " |
| 20 x 10 best seconds | 12 15 0 | " " |
| 20 x 12 " | 13 10 0 | " " |
| 16 x 8 " " " | 7 0 0 | " " |
| 20 x 10 best blue Portmadoc | 12 12 6 | " " |
| 16 x 8 best blue Portmadoc | 6 12 6 | " " |

## SLATES—(*continued*).

| | £ s. d. | |
|---|---|---|
| 20 x 10 best Eureka unfading green | 15 2 6 | per 1000 of 1200 at r.d. |
| 20 x 12 " " | 17 2 6 | " " |
| 18 x 10 " " | 12 10 0 | " " |
| 16 x 8 " " | 10 5 0 | " " |
| 20 x 10 permanent green | 11 10 0 | " " |
| 18 x 10 " " | 9 10 0 | " " |
| 16 x 8 " " | 6 10 0 | " " |

## TILES.

| | s. d. | |
|---|---|---|
| Best plain red roofing tiles | 42 0 | per 1000 at rly. depôt. |
| Hip and Valley tiles | 3 7 | per doz. " " |
| Best Brosely tiles | 50 0 | per 1000 " " |
| Do. Ornamental tiles | 52 6 | " " " |
| Hip and Valley tiles | 4 0 | per doz. " " |
| Best Ruabon red, brown, or brindled do. (Edwards) | 57 6 | per 1000 " " |
| Do. Ornamental do | 60 0 | " " " |
| Hip tiles | 4 0 | per doz. " " |
| Valley tiles | 3 0 | " " " |
| Best Red or Mottled Staffordshire do. (Peakes) | 51 9 | per 1000 " " |
| Do. Ornamental do. | 54 6 | " " " |
| Hip tiles | 4 1 | per doz. " " |
| Valley tiles | 3 8 | " " " |
| Best "Rosemary" brand plain tiles | 48 0 | per 1000 " " |
| Best Ornamental tiles | 50 0 | " " " |
| Hip tiles | 4 0 | per doz. " " |
| Valley tiles | 3 8 | " " " |
| Best "Hartshill" brand plain tiles, sand faced | 50 0 | per 1000 " " |
| Do. pressed | 47 6 | " " " |
| Do. Ornamental do | 50 0 | " " " |
| Hip tiles | 4 0 | per doz. " " |
| Valley tiles | 3 6 | " " " |

## WOOD.

| | At per standard. £ s. d. | £ s. d. | |
|---|---|---|---|
| Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in | 15 10 0 | 16 10 0 | |
| Deals: best 3 by 4 | 14 10 0 | 15 10 0 | |
| Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in. | 11 10 0 | 12 10 0 | |
| Battens: best 2½ by 6 and 3 by 6 | 0 10 0 | less than 7 in. and 8 in. | |
| Deals: seconds | 1 0 0 | less than best | |
| Battens: seconds | 0 10 0 | " " " | |
| 2 in. by 4 in. and 2 in. by 6 in. | 9 0 0 | 9 10 0 | |
| 2 in. by 4½ in. and 2 in. by 5 in. | 8 10 0 | 9 10 0 | |
| Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in. | 0 10 0 | more than battens. | |
| ¾ in. | 1 0 0 | " | |
| Fir timber: best middling Danzig or Memel (average specification) | At per load of 50 ft. 4 10 0 | 5 0 0 | |
| Seconds | 4 5 0 | 4 10 0 | |
| Small timber (8 in. to 10 in.) | 3 12 6 | 3 15 0 | |
| Small timber (6 in. to 8 in.) | 3 0 0 | 3 10 0 | |
| Swedish balks | 2 15 0 | 3 0 0 | |
| Pitch-pine timber (30 ft. average) | 3 5 0 | 3 15 0 | |

JOINERS' WOOD.

| | At per standard. | | |
|---|---|---|---|
| White Sea: first yellow deals, 3 in. by 11 in | 23 0 0 | 24 0 0 | |
| 3 in. by 9 in. | 21 0 0 | 22 10 0 | |
| Battens, 2½ in. and 3 in. by 7 in. | 17 0 0 | 18 10 0 | |
| Second yellow deals, 3 in. by 11 in. | 18 10 0 | 20 0 0 | |
| " " 3 in. by 9 in. | 17 10 0 | 19 0 0 | |
| Battens, 2½ in. and 3 in. by 7 in. | 13 10 0 | 14 10 0 | |
| Third yellow deals, 3 in. by 11 in. and 9 in. | 15 10 0 | 16 10 0 | |
| Battens, 2½ in. and 3 in. by 7 in. | 11 10 0 | 12 10 0 | |
| Petersburg: first yellow deals, 3 in. by 11 in. | 21 0 0 | 22 10 0 | |
| Do. 3 in. by 9 in. | 18 0 0 | 19 10 0 | |
| Battens | 13 10 0 | 15 0 0 | |
| Petersburg: second yellow deals, 3 in. by 11 in. | 16 0 0 | 17 0 0 | |
| Do. 3 in. by 9 in. | 14 10 0 | 16 0 0 | |
| Battens | 11 0 0 | 12 10 0 | |
| Third yellow deals, 3 in. by 11 in. | 13 10 0 | 14 0 0 | |
| Do. 3 in. by 9 in. | 13 0 0 | 14 0 0 | |
| Battens | 10 0 0 | 11 0 0 | |
| White Sea and Petersburg:— First white deals, 3 in. by 11 in. | 14 10 0 | 15 10 0 | |
| " " 3 in. by 9 in. | 13 10 0 | 14 10 0 | |
| Battens | 11 0 0 | 12 0 0 | |
| Second white deals, 3 in. by 11 in. | 13 10 0 | 14 10 0 | |
| " " 3 in. by 9 in. | 12 10 0 | 13 10 0 | |
| " " battens | 9 10 0 | 10 10 0 | |
| Pitch-pine: deals | 16 10 0 | 20 0 0 | |
| Under 2 in. thick extra | 0 10 0 | 1 0 0 | |
| Yellow Pine—First, regular sizes | 35 0 0 | upwards. | |
| Oddments | 24 0 0 | 26 0 0 | |
| Seconds, regular sizes | 26 10 0 | 28 10 0 | |
| Yellow Pine oddments | 22 0 0 | 24 0 0 | |
| Kauri Pine—Planks, per ft. cube | 0 3 6 | 0 5 0 | |
| Danzig and Stettin Oak Logs— Large, per ft. cube | 0 2 6 | 0 3 6 | |
| Small " " | 0 2 3 | 0 2 6 | |
| Wainscot Oak Logs, per ft. cube | 0 3 0 | 0 5 6 | |
| Dry Wainscot Oak, per ft. sup. as inch | 0 0 7 | 0 0 8 | |
| ¾ in. do. do. | 0 0 6½ | — | |
| Dry Mahogany—Honduras, Tabasco, per ft. super. as inch | 0 0 9 | 0 0 11 | |
| Selected, Figury, per ft. sup. as inch | 0 1 6 | 0 2 0 | |
| Dry Walnut, American, per ft. sup. as inch | 0 0 10 | 0 1 0 | |
| Teak, per load | 17 0 0 | 21 0 0 | |
| American Whitewood Planks— per ft. cube | 0 4 0 | — | |

Prepared Flooring—

| | Per square. | |
|---|---|---|
| 1 in. by 7 in. yellow, planed and shot | 0 13 6 | 0 17 6 |
| 1 in. by 7 in. yellow, planed and matched | 0 14 0 | 0 18 0 |
| 1¼ in. by 7 in. yellow, planed and matched | 0 16 0 | 1 0 0 |
| 1 in. by 7 in. white, planed and shot | 0 12 0 | 0 14 6 |
| 1 in. by 7 in. white, planed and matched | 0 12 6 | 0 15 0 |
| 1¼ in. by 7 in. white, planed and matched | 0 15 0 | 0 16 6 |

## WOOD—(*continued*)—

| | Per square. £ s. d. | £ s. d. |
|---|---|---|
| ¾ in. by 7 in. yellow, matched and beaded or V-jointed brds. | 0 11 0 | 0 13 6 |
| ¾ in. by 7 in. do. do. do. | 0 14 0 | 0 18 0 |
| 1 in. by 7 in. white do. do. | 0 10 0 | 0 11 6 |
| 1 in. by 7 in. do. do. | 0 11 6 | 0 13 6 |

6 in. at 6d. to 9d. per square less than 7 in.

## JOISTS, GIRDERS, &c.

| | In London, or delivered Railway Vans, per ton. £ s. d. | £ s. d. |
|---|---|---|
| Rolled Steel Joists, ordinary sections | 6 5 0 ... | 7 5 0 |
| Compound Girders, ordinary sections | 8 2 6 ... | 9 5 0 |
| Angles, Tees and Channels, ordinary sections | 7 17 6 ... | 8 17 6 |
| Flitch Plates | 8 5 0 ... | 8 15 0 |
| Cast Iron Columns and Stanchions including ordinary patterns | 7 2 6 ... | 8 5 6 |

## METALS.

| | Per ton, in London. £ s. d. | £ s. d. |
|---|---|---|
| IRON— | | |
| Common Bars | 7 5 0 ... | 7 15 0 |
| Staffordshire Crown Bars, good merchant quality | 7 15 0 ... | 8 5 0 |
| Staffordshire "Marked Bars" | 10 0 0 ... | — |
| Mild Steel Bars | 8 15 0 ... | 9 5 0 |
| Hoop Iron, basis price | 9 5 0 ... | 9 10 0 |
| " " Galvanized | 17 10 0 ... | — |
| (*And upwards, according to size and gauge.) | | |
| Sheet Iron (Black)— Ordinary sizes to 20 g. | 9 15 0 ... | — |
| " " 24 g. | 10 15 0 ... | — |
| " " 26 g. | 12 5 0 ... | — |
| Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g. | 12 15 0 ... | — |
| Ordinary sizes to 22 g. and 24 g. | 13 5 0 ... | — |
| " " 26 g. | 14 5 0 ... | — |
| Sheet Iron, Galvanised, flat, best quality— Ordinary sizes to 20 g. | 16 0 0 ... | — |
| " " 22 g. and 24 g. | 16 10 0 ... | — |
| " " 26 g. | 18 0 0 ... | — |
| Galvanised Corrugated Sheets— Ordinary sizes 6 ft. to 8 ft. 20 g. | 12 10 0 ... | — |
| " " 22 g. and 24 g. | 13 0 0 ... | — |
| " " 26 g. | 13 15 0 ... | — |
| Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker | 11 15 0 ... | — |
| Best Soft Steel Sheets, 22 g. & 24 g. | 12 15 0 ... | — |
| " " " 26 g. | 14 0 0 ... | — |
| Cut nails, 3 in. to 6 in. | 9 0 0 ... | 9 10 0 |
| (Under 3 in., usual trade extras.) | | |

## LEAD, &c.

| | Per ton, in London. £ s. d. | £ s. d. |
|---|---|---|
| LEAD—Sheet, English, 3lb. and up | 14 10 0 ... | — |
| Pipe in coils | 15 0 0 ... | — |
| Soil pipe | 17 10 0 ... | — |
| Compo pipe | 17 10 0 ... | — |
| ZINC—Sheet— Vieille Montagne ton | 26 5 0 ... | — |
| Silesian | 26 0 0 ... | — |
| COPPER— Strong Sheet per lb. | 0 0 10½ ... | — |
| Thin " " | 0 0 11½ ... | — |
| Copper nails " | 0 0 11 ... | — |
| BRASS— Strong Sheet per lb. | 0 0 10 ... | — |
| Thin " " | 0 0 11 ... | — |
| TIN—English Ingots " | 0 1 4 ... | — |
| SOLDER—Plumbers' " | 0 0 6½ ... | — |
| Tinmen's " | 0 0 8 ... | — |
| Blowpipe " | 0 0 9 ... | — |

## ENGLISH SHEET GLASS IN CRATES.

| | | |
|---|---|---|
| 15 oz. thirds | 2d. per ft. | delivered. |
| " fourths | 1½d. " | " |
| 21 oz. thirds | 3d. " | " |
| " fourths | 2¾d. " | " |
| 26 oz. thirds | 3½d. " | " |
| " fourths | 3d. " | " |
| 32 oz. thirds | 4½d. " | " |
| " fourths | 4d. " | " |
| Fluted Sheet, 15 oz. | 2¾d. " | " |
| " 21 oz. | 3¾d. " | " |
| ⅛ Hartley's Rolled Plate | 1¾d. " | " |
| 3/16 " " " | 1¾d. " | " |
| ¼ " " " | 2⅜d. " | " |

## OILS, &c.

| | | £ s. d. |
|---|---|---|
| Raw Linseed Oil in pipes or barrels | per gallon | 0 1 7 |
| " " " in drums | " | 0 1 10 |
| Boiled " " in pipes or barrels | " | 0 1 10 |
| " " " in drums | " | 0 2 1 |
| Turpentine, in barrels | " | 0 3 9 |
| " in drums | " | 0 3 11 |
| Genuine Ground English White Lead | per ton | 19 0 0 |
| Red Lead, Dry | " | 19 0 0 |
| Best Linseed Oil Putty | per cwt. | 0 7 6 |
| Stockholm Tar | per barrel | 1 12 0 |

## VARNISHES, &c.

| | Per gallon. £ s. d. |
|---|---|
| Fine Pale Oak Varnish | 0 8 0 |
| Pale Copal Oak | 0 10 6 |
| Superfine Pale Elastic Oak | 0 12 6 |
| Fine Extra Hard Church Oak | 0 10 0 |
| Superfine Hard-drying Oak, for seats of Churches | 0 14 0 |
| Fine Elastic Carriage | 0 12 6 |
| Superfine Pale Elastic Carriage | 0 16 0 |
| Fine Pale Maple | 0 16 0 |
| Finest Pale Durable Copal | 0 18 0 |
| Extra Pale French Oil | 1 1 0 |
| Eggshell Flatting Varnish | 0 18 0 |
| White Copal Enamel | 1 4 0 |
| Extra Pale Paper | 0 12 0 |
| Best Japan Gold Size | 0 10 6 |
| Best Black Japan | 0 16 0 |
| Oak and Mahogany Stain | 0 9 0 |
| Brunswick Black | 0 8 6 |
| Berlin Black | 0 16 0 |
| Knotting | 0 10 0 |
| French and Brush Polish | 0 10 0 |

## TENDERS.

**Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]**

*** Denotes *accepted.* † Denotes *provisionally accepted.***

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**ALVASTON** (near Nantwich).—For the erection of an infectious diseases hospital, for the Nantwich Joint Hospital Board. Mr. C. E. Davenport, architect, Nantwich :—

| | | | | | |
|---|---|---|---|---|---|
| J. H. Holt | £11,100 | 0 0 | J. Harding | £8,790 | 10 0 |
| Marshall | 10,818 | 0 0 | Cox & Vaughan | 8,697 | 0 0 |
| Geo. Bullock | 9,370 | 0 0 | Thos. Huxley | 8,650 | 0 0 |
| Thos. Smith & Son | 9,193 | 0 0 | Townson & Son | 8,399 | 10 0 |
| J. Williams & Sons | 9,114 | 0 0 | Birchall Bros. | 8,336 | 0 0 |
| Mickiewright & Son | 9,085 | 0 0 | Gallimore | 8,287 | 0 0 |
| | | | J. T. Gresty | 8,100 | 0 0 |
| | | | F. Matthews, Nantwich* | 7,700 | 0 0 |

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**ASKERN.**—For rebuilding Railway Hotel, Askern. Messrs. Garside & Pennington, architects, Ropergate-chambers, Pontefract :—

| | | | | | |
|---|---|---|---|---|---|
| Bourne & Wilkinson | £2,298 | 16 9 | James Bryant & Son | £1,788 | 13 9 |
| F. Foers & Son | 2,084 | 2 8 | Thompson & Co. | 1,697 | 10 0 |
| Dennis, Gill, & Son | 1,867 | 0 0 | Wm. Barton | 1,630 | 0 0 |
| Kelsey | 1,851 | 0 0 | H. Mollekin | 1,584 | 0 0 |
| Ullathorne | 1,840 | 0 0 | W. Darley, Pontefract* | 1,562 | 15 3 |

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**BARNARD CASTLE.**—Accepted for the erection of house, Staindrop-road, for Mr. J. Hardy. Mr. T. Farrow, architect, 7, Market-place, Barnard Castle. Quantities by architect :—

| | | | |
|---|---|---|---|
| *Bricklayer and Mason* : C. Martin* | £226 | 14 | 10 |
| *Joiner* : C. Martin* | 91 | 17 | 3 |
| *Slater* : C. Martin* | 21 | 7 | 11 |
| *Plasterer* : C. Martin* | 25 | 0 | 0 |
| *Plumber* : C. Raine* | 35 | 0 | 0 |
| *Painter* : J. Wrathall | 7 | 5 | 0 |

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**BEDWAS** (MON.). — For erecting twenty-seven dwelling-houses, for the Trustees of Bedwas Building Club. Mr. G. L. Watkins, architect, Station-terrace, Caerphilly :—

| | Per house. | | | Per house. | |
|---|---|---|---|---|---|
| W. & D. Thomas | £225 | 5 | Isaac Williams | £189 | 0 |
| T. F. Howells | 222 | 0 | Williams Bros., Roath House, Bedwas* | 185 | 15 |
| A. Herne & Co. | 220 | 0 | T. Rossiter & Sons | 185 | 0 |
| J. Charles | 205 | 0 | M. Harding | 180 | 0 |
| T. W. & E. J. Jenkins | 199 | 10 | | | |
| Colin Sava | £191 | 10 | | | |

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**BRIDLINGTON.**—For erecting a detached residence in Cardigan-road, for Mrs. Bentley. Mr. J. Earnshaw, architect, Carlton House, Bridlington :—

| | | | | | |
|---|---|---|---|---|---|
| R. Musk | £635 | 18 0 | E. Wilson | £527 | 0 0 |
| J. Rennard | 595 | 10 0 | W. Hoggard | 525 | 10 0 |
| T. Spink | 594 | 15 0 | A. A. Booth | 522 | 0 0 |
| T. Wood | 582 | 15 0 | Smallwood & Straw | 516 | 4 0 |
| Sampson & Siddall | 548 | 0 0 | T. Kneeshaw | 514 | 0 0 |
| A. Gardam | 533 | 19 6 | J. Sawdon* | 506 | 0 0 |

[All of Bridlington.]

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**BRIGHTON.**—For new engineering workshop, etc., at the Municipal Technical School, for the Education Committee :—

| | | | |
|---|---|---|---|
| G. R. Lockyer | £1,866 | J. Barnes | £1,647 |
| J. & W. Simmonds | 1,778 | R. Cook & Sons | 1,636 |
| J. Parsons & Sons | 1,674 | Sattin & Evershed, Freshfield Road, Brighton† | 1,630 |
| Rowland Bros. | 1 669 | | |
| W. A. Field & Co. | 1,661 | | |
| J. Longley & Co. | 1,649 | | |

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**CLEETHORPES** (Lincolnshire).—For the erection of a fire-station and cart-sheds, etc., in Poplar-road, for the Cleethorpes-with-Thrunscoe Urban District Council. Mr. E. Rushton, Engineer and Surveyor, Poplar-road, Cleethorpes :—

| | | | |
|---|---|---|---|
| Charles Lewis | £915 | 0 | G. F. Mashford | 569 | 0 |
| H. Marrows | 662 | 0 | William Ion, Cleethorpes* | 528 | 0 |
| T. & E. G. Wilkinson | 600 | 0 | | | |

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**CORK.**—For the erection of a Celtic cross at Gill Abbey, for the Committee of the Soldiers' Memorial. Messrs. W. H. Hill & Son, architects, 28, South-mall, Cork :—

J. Maquire, Mulgrave-road, Cork* £320

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**CORK.**—For additions to house at Shorn Hill, Cork, for Mr. W. H. Bible, jun. Messrs. W. H. Hill & Son, architects, 28, South-mall, Cork :—

D. Kelleper, Sunday's-well, Cork ..... £250

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**COWPEN.**—For making up Harper-street, portion of Wright-street and Gatacre-street, and Back Waterloo-road, for the Urban District Council. Mr. Grieves, Surveyor, Seaforth-street, Waterloo, Blyth :—

| | | | |
|---|---|---|---|
| Geo. E. Simpson | £429 | 6 3 | Jas. Shannon, |
| Jacob Robson | 426 | 7 9 | Morpeth* £413 10 11 |

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**DANDALEITH** (N.B.).—For erecting cottages, for the Countess Dowager of Seafield. Mr. J. Brydon, architect, Seafield Estates Office, Rothes :—

| | | Offerers. |
|---|---|---|
| *Mason* : Jas. Fraser, Green-street, Rothes* | £68 15 0 | 15 |
| *Carpenter* : Thos. McKenzie, New Elgin, Elgin* | 89 7 0 | 8 |
| *Slater* : A. Davidson, Elgin* | 29 16 0 | 5 |
| *Plasterer* : Hume Bros., Dufftown* | 30 0 0 | 3 |
| *Plumber* : A. Davidson, Elgin* | 9 6 6 | 9 |
| *Painter* : Jas. Stewart, Rothes* | 7 5 0 | 2 |
| | £234 9 6 | |

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**DARTFORD.**—For heating and hot-water supplies and plumbing work to additions at hospital, Bow Arrow-lane, for the Joint Hospital Committee. Mr. R. Mardant, architect, 28, Theobald's-road, London, W.C. :—

S. W. Gibson & Co., Dartford .... £492 10 0

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**DINNINGTON.**—For 1,300 yds. of pipe sewers, etc., at Dinnington Colliery, Northumberland, for Seaton Burn Coal Co. Mr. H. W. Taylor, A.M.Inst.C.E., St. Nicholas'-chambers, Newcastle-on-Tyne :—

| | | | |
|---|---|---|---|
| J. B. Stott | £749 | J. Coxon & Son | £512 |
| Jacob Robson | 653 | W. Wright | 509 |
| J. Carrick | 637 | G. Simpson | 504 |
| J. W. Robson | 634 | J. Thompson, Gosforth, Northumberland* | 495 |
| E. Henderson & Son | 611 | E. Edgar | 486 |
| Millward & Co. | 601 | | |
| W. Carr | 545 | | |
| J. Shannon | 542 | | |

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**GORLESTON.** — For rebuilding public-house at Gorleston, near Yarmouth. Messrs. Morgan & Buckingham, architects, 3, Redwell-street, Norwich :—

| | | | |
|---|---|---|---|
| J. E. Pestell | £1,440 | Barham & Swan, Lowestoft* | £1,398 |
| C. E. Earl | 1,424 | | |

---

**GRIMSBY.**—For six sewer ventilating columns, for the County Borough of Grimsby. Mr. H. Gilbert Whyatt, Borough Engineer :—

| | Steel Posts. | | | Cast-Iron Posts. | | |
|---|---|---|---|---|---|---|
| Stone & Co., London* | £53 | 2 | 0 | .. | — | |
| Goldthorpe & Shuttleworth | 53 | 12 | 6 | .. | — | |
| Norton Bros. & Co. | 63 | 0 | 0 | .. | £60 | 0 0 |
| Blakeborough & Sons | 65 | 0 | 0 | .. | — | |
| Jos. Aird | 67 | 10 | 0 | .. | — | |
| Amos-Crosta Engineering Co. | — | | | .. | 75 | 0 0 |
| Parsons & Wills | 87 | 0 | 0 | .. | 75 | 0 0 |

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**HARROGATE.**—For the supply and delivery at Masham Station of 1,000 tons of Portland cement, for the Corporation. Mr. E. W. Dixon, Engineer, 14, Albert-street, Harrogate :—

| | Per ton. |
|---|---|
| Otto Trechmann & Co., Warren Cement Works, West Hartlepool* | £1 12 9 |

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**HARROGATE.**—For supply at Masham Station, N.E.R., of 2,000 wooden sleepers, for quarry railway, for the Corporation. Mr. E. W. Dixon, M.Inst.C.E., 14, Albert-street, Harrogate :—

| | Per sleeper. s. d. |
|---|---|
| 4 ft. 6 in. by 9 in. by 4½ in. sleepers. | |
| W. S. Easson & Co., Newcastle-on-Tyne. | 1 2½ |

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**HARROGATE.**—For flat-bottom steel rails, etc., for Masham Quarry Railway, for the Corporation. Mr. E. W. Dixon, M.Inst.C.E., 14, Albert-street, Harrogate :—

| | | Per ton. |
|---|---|---|
| T. W. Ward, Albion Works, Saville-street, Sheffield* | 28lb. rails | £5 4 0 |
| | 60lb. rails | 4 6 9 |
| | | Per cwt. |
| | Fishplates for 28lb. rails | £0 9 0 |
| | Fishplates for 60lb. rails | 0 8 3 |
| | Railway brobs | 0 11 0 |
| | Bolts, nuts, and washers for fishplates | 0 15 0 |

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**HEBBURN.**—For road works in Jervis-street and other streets, for the Urban District Council. Mr. H. Paterson, Surveyor, Argyle-street, Hebburn. Quantities by Surveyor :—

| | | | |
|---|---|---|---|
| J. Thompson | £968 6 2 | J. McLaren & Son | £763 1 3 |
| J. Hollings | 929 17 8 | G. E. Simpson | 729 4 5 |
| F. Dixon | 925 10 0 | T. Callaghan, Jarrow-on-Tyne* | 712 14 0 |
| G. Thornton & Co. | 871 8 5 | | |
| M. D. Young | 838 11 8 | | |
| Wm. Kennedy | 816 12 3 | | |

[Surveyor's estimate, £766 17s. 9d.]

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**HIGH HARRINGTON.**—For erecting a detached villa at High Harrington, Cumberland, for Mr. B. J. Whitaker. Messrs. W. G. Scott & Co., architects, Victoria-buildings, Workington :—

| | | | |
|---|---|---|---|
| *Builder* : G. Mann, Workington* | £190 | 4 | 0 |
| *Joiner* : J. Carruthers, Workington* | 99 | 0 | 0 |
| *Slater* : E. Burrow, Workington* | 27 | 0 | 0 |
| *Plumber* : D. M. Walker, Workington* | 40 | 0 | 0 |
| *Plasterer* : P. Gannon, Carlisle* | 42 | 7 | 6 |
| *Painter* : W. T. Sherwood, Workington* | 11 | 0 | 0 |

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**HOLYWOOD.**—For laying street crossings, flagging and curbing footpaths, and laying water mains, for the Urban District Council. Mr. W. D. R. Taggart, C.E., Town Surveyor. Quantities by Surveyor :—

| | | | |
|---|---|---|---|
| *For Streets* : Grainger Bros.* | £511 | 0 | 0 |
| *For Footpaths* : Grainger Bros.* | 22 | 14 | 0 |
| *For Three Crossings* : Grainger Bros.* | 47 | 14 | 0 |
| *Extension of Water Mains* : Thomas Greer* | 2 | 8 | 0 |

[All of Holywood, Down.]

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**HULL.**—For erecting a greenhouse, potting shed, etc., East Park, Holderness-road, for the Parks and Burial Committee of the Corporation. Mr. J. H. Hirst, City Architect, Town Hall, Hull :—

| | | | |
|---|---|---|---|
| J. R. Woods | £440 | 0 | F. W. Wilson, Hull* £270 0 |
| J. Allison | 316 | 14 | |

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**HULL.**—For the erection of two cabmen's shelters, in Wellington-street and Nelson-street, for the Corporation. Mr. J. H. Hirst, City Architect, Town Hall, Hull :—

| | | | | |
|---|---|---|---|---|
| H. Grassby | Wellington-street | £88 | 0 | 0 |
| | Nelson-street | 112 | 0 | 0 |
| J. H. Kelly | Wellington-street | 98 | 16 | 0 |
| | Nelson-street | 87 | 12 | 0 |
| J. Darneley | Wellington-street | 77 | 0 | 0 |
| | Nelson-street | 95 | 0 | 0 |
| C. Bray | Wellington-street | 75 | 0 | 0 |
| | Nelson-street | 85 | 0 | 0 |
| G. W. Stephenson* | Wellington-street | 68 | 0 | 0 |
| | Nelson-street | 78 | 0 | 0 |

[All of Hull.]

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**ISLEWORTH.**—For new road and sewer on the estate of Sir John Dickson-Poynder, Bart., M.P. Messrs. Lee & Pain, Surveyors, 63, Lincoln's Inn-fields, W.C. :—

| | | | |
|---|---|---|---|
| Patman & Fotheringham | £2,993 | W. Neave & Sons | £2,435 |
| Joseph Mears | 2,986 | C. Killingback & Co. | 2,397 |
| | | S. Kavanah & Co. | 2,266 |

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**HULL.**—For the erection of school buildings, etc., for the Trustees of the Boulevard Baptist Church. Mr. T. Brownlow Thompson, architect, 15, Parliament-street, Hull. Quantities by architect :—

| | | | | | |
|---|---|---|---|---|---|
| E. Good & Son | £3,450 | 0 0 | Bowman & Sons | £3,072 | 0 0 |
| F. W. Wilson | 3,438 | 9 7 | H. Neal | 3,060 | 11 0 |
| Amalgamated Builders, Ltd. | 3,367 | 9 9 | F. Bilton | 3,051 | 15 8 |
| J. E. Train | 3,145 | 16 4 | J. Simpson & Son | 3,031 | 10 6 |
| G. Houlton | 3,124 | 0 0 | T. Goats | 3,008 | 0 0 |
| J. Railton | 3,122 | 12 9 | J. R. Woods | 3,007 | 0 0 |
| G. Berridge | 3,094 | 12 7 | M. Harper | 2,980 | 19 0 |
| | | | H. T. Arnott | 2,959 | 0 0 |
| | | | H. Kaye* | 2,910 | 0 0 |

[All of Hull].

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**KILMARNOCK.**—For electric lighting and tramway work for the Corporation. Messrs. Kennedy and Jenkin, engineers, 17, Victoria-street, Westminster, London :—

*Arc and Incandescent Lamps, Posts, and Gear.*

| | |
|---|---|
| Oliver & Co., Woolwich* | £1,275 2 9 |

*Feeders, Mains, Switch Pillars, and Road Work.*

| | |
|---|---|
| Callender's Cable & Construction Co., Ltd., Victoria Embankment, London, E.C.* | £14,115 8 4 |

*Meters.*

| | |
|---|---|
| Chamberlain & Hookham, Ltd., Birmingham* | £209 2 0 |

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**KNUTSFORD.**—For the erection of a free library, for the Urban District Council. Messrs. Darbyshire & Smith, architects, 17, Brazennose-street, Manchester :—

| | | | |
|---|---|---|---|
| Burgess & Galt | £1,710 | 0 | Clayton Bros. | £1,482 | 14 |
| Hamilton & Son | 1,651 | 0 | Hughes & Stirling | 1,482 | 0 |
| Beswicks | 1,645 | 0 | Redfern Bros., Knutsford† | 1,435 | 0 |
| Brown & Son | 1,640 | 0 | | | |
| Martin Stone | 1,570 | 0 | | | |
| J. Acton | 1,510 | 0 | | | |

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**LONDON.**—For stoneware pipe surface-water sewer, St. James'-lane, Muswell Hill, for Hornsey Borough Council. Mr. E. J. Lovegrove, Borough Engineer, Southwood-lane, Highgate, N. :—

| | | | |
|---|---|---|---|
| J. A. Dunmore | £574 | 17 11 | R. Ballard, Ld. | £419 | 0 9 |
| T. Adams | 552 | 7 0 | C. W. Killingback & Co., James-st., Camden Town* | 415 | 19 10 |
| Wilkinson Bros. | 529 | 0 0 | | | |
| Foster Bros. | 512 | 0 0 | | | |
| R. Jackson | 476 | 11 3 | | | |
| D. R. Paterson | 468 | 17 0 | | | |

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**LONDON.**—For making-up Down-lane (first portion) and Down-lane (second portion), for the Tottenham Urban District Council. Mr. W. H. Prescott, Engineer, Coombes Croft House, 712, High-road, Tottenham. Quantities by Messrs. Campbell & Son :—

| | First portion. | | Second portion. |
|---|---|---|---|
| E. Frost, Tottenham | £3,331 | 12 5† | £849 14 11 |
| Grounds & Newton, Tottenham | 3,357 | 9 6 | 847 12 0† |
| E. T. Bloomfield | 3,370 | 6 0 | 857 18 0 |
| O. Bloomfield | 3,655 | 19 3 | 898 2 9 |
| T. Adams | 3,424 | 6 0 | 888 4 8 |

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### LONDON SCHOOL BOARD TENDERS.

*Gordonbrock-road Site, Brockley : New School.*

Boys' School—one story: Hall. 56 ft. by 26 ft. 4½ in.; classrooms, 56, 56, 48, 48, 40, 40, 40. Heating by low-pressure hot-water apparatus. Girls' School — one story: Hall, 56 ft. by 26 ft. 4½ in.; classrooms, 56, 56, 48, 48, 40, 40, 40. Heating by low-pressure hot-water apparatus. Infants' School—one story: Hall, 54 ft. by 26 ft. 6 in.; classrooms, 50, 50, 48, 48, 48, 48, 48. Heating by low-pressure hot-water apparatus and open fires. (School planned for future extension.) Area of site, 87,120 sq. ft. Playgrounds, area per child: boys', 66 sq. ft.; girls' 47 sq. ft.; infants', 42 sq. ft. Also Schoolkeeper's house, Cookery, and Laundry centre :—

| | | | |
|---|---|---|---|
| J. Greenwood, Ltd. | £25,892 | McCormick & Sons | £24,061 |
| Perry & Co. | 25,781 | J. Carmichael | 24,047 |
| Leslie & Co., Ltd. | 25,715 | Treasure & Son | 24,023 |
| J. Simpson & Son | 25,475 | Hudson Bros. | 24,004 |
| J. & M. Patrick | 25,464 | W. Johnson & Co., Ltd. | 23,995 |
| C. Miskin & Sons | 25,055 | W. J. Mitchell & Son | 23,993 |
| T. L. Green | 24,866 | J. & C. Bowyer | 23,683 |
| E. Lawrance & Sons | 24,829 | Lathey Bros. | 23,680 |
| J. Garrett & Son | 24,782 | C. Dearing & Son | 23,513 |
| J. Longley & Co. | 24,698 | J. Smith & Sons, Ltd. | 23,290 |
| J. Chessum & Sons | 24,607 | Holliday & Greenwood, Ltd. | 23,236 |
| Martin, Wells & Co., Ltd. | 24,540 | G. E. Wallis & Sons | 22,987 |
| Patman & Fotheringham, Ltd. | 24,211 | W. Downs* | 22,863 |
| F. & H. F. Higgs | 24,149 | | |
| Stimpson & Co. | 24,100 | | |
| C. F. Kearley | 24,076 | | |

*Holbeach-road School, Catford : Enlargement.*

Enlargement: Boys', 96; girls', 96; infants', 108—total, 300. Classrooms, Boys', 56, 40; girls', 56, 40; infants', 60, 48. Providing two staircases for boys' and girls', cloakrooms for all departments. Stock rooms for boys' and girls', and teachers' rooms ;—

| | | | |
|---|---|---|---|
| Holliday & Greenwood, Ltd. | £5,577 | J. Smith & Sons, Ltd. | £5,195 |
| Rice & Son | 5,558 | Treasure & Son | 5,188 |
| Edwards & Medway | 5,553 | E. P. Bulled & Co. | 5,092 |
| G. E. Wallis & Sons | 5,539 | W. J. Mitchell & Son | 5,068 |
| J. & C. Bowyer | 5,436 | T. D. Leng* | 5,037 |
| W. Akers & Co. | 5,201 | | |

*Bonneville-road School, Clapham Park : for Completion of New School.*

The Board are now erecting a permanent school on the Bourneville-road site, Clapham Park, to provide accommodation for 996 children. The school is planned for enlargement by an additional classroom for each department, thereby increasing the total accommodation of the school to 1,124 places. The Board of Education have now approved a proposal to complete the school according to these plans at once; and the Works Committee accordingly recommended that the provision of these additional classrooms (the cost of which is estimated at £991) be carried out by Messrs. J. & M. Patrick, the contractors for the new school, on their contract schedule of prices.

TENDERS.—LONDON SCHOOL BOARD (*continued*).

*The "Alma" School, Southwark Park-road: Enlargement.*

Boys': Providing two classrooms for 40 children each, head-master's room, and stock room. Girls': Providing two classrooms for 40 children each, head-mistress's room, and stock room. Infants': Providing two classrooms for 48 children each, head mistress's room, and stock room. Providing demonstration tables in boys' and girls' departments, and internal w.c.'s for teachers. The revised accommodation of the school, on the completion of the enlargement, will be—boys, 320; girls, 320; infants, 402; total, 1,042. (There is a total gain of 256 places, but as a class of 60 will be removed from each of the boys' and girls' halls and one of 80 from the infants' hall, the net gain is only 56 places):—

| | | | |
|---|---|---|---|
| J. Greenwood, Ltd. | £2,985 0 | J. Garrett & Son | £2,781 0 |
| E. Triggs | 2,884 0 | H. Wall & Co. | 2,779 0 |
| E. P. Bulled & Co. | 2,875 0 | J. Marsland & Sons | 2,775 0 |
| H. Groves | 2,862 0 | E. B. Tucker | 2,752 1 |
| Rice & Son | 2,804 0 | W. Downs | 2,688 0 |
| F. G. Minter | 2,803 0 | G. Neal | 2,672 0 |
| Edwards & Medway | 2,789 0 | W. Akers & Co. | 2,671 0 |
| Holloway Bros., Ltd. | 2,786 0 | Lathey Bros.* | 2,657 0 |

*Sleaford-street School, Battersea Park-road, for Improvements, Including the Provision of Halls etc.*

Providing halls, and additional lighting, restepping classrooms in each department; providing two classrooms in each department; enclosing, draining, and tar-paving the additional land; providing new system of heating apparatus, etc. The plans also include the erection of a new laundry centre on arches (thus forming a covered playground underneath), to take the place of the existing building, which will have to be removed in order to provide the additional classrooms. The revised accommodation of the school upon the completion of the improvements will be: Boys, 438; girls, 438 infants, 496; total, 1,372; being a loss of twenty-nine places in the accommodation, which is occasioned by the necessity of reducing the length of certain classrooms so as to form corridors and halls, and the recalculation of other classrooms on the seat basis.

| | | | |
|---|---|---|---|
| General Builders, Ltd. | £11,760 | Spencer, Santo, & Co., Ltd. | 9,617 |
| E. Lawrance & Sons | 10,252 | Edwards & Medway | 9,584 |
| J. Simpson & Son | 9,997 | T. D. Leng | 9,578 |
| Martin, Wells, & Co., Ltd. | 9,989 | Hudson Bros. | 9,569 |
| Rice & Son | 9,945 | J. Carmichael | 9,548 |
| J. Garrett & Son | 9,857 | Lathey Bros. | 9,289 |
| Holloway Bros., Ltd. | 9,835 | W. Johnson & Co., Ltd. | 9,247 |
| E. Triggs | 9,701 | Stimpson & Co.* | 9,210 |

*Barnett-road Site, Lavender-hill, Arrangements for Erection of Separate Department for Forty Older Mentally Defective Boys, Manual Training Centre, etc.*

The Board of Education, on December 30, 1903, approved the proposal to provide a separate department for the accommodation of older mentally defective boys, consisting of two classrooms for twenty children each, and a room for manual work, subject to the specific approval of the plans. The Board of Education, on the same date, also sanctioned the provision of a manual training centre for forty boys on this site to replace the existing centre at Gideon-road, Lavender-hill. Preliminary plans have now been prepared for carrying out these additional works, and the Committee recommended that, so soon as the Board of Education shall have approved the plans, instructions be given to Messrs. J. Garrett & Son to erect the proposed buildings (the cost of which is estimated at 3,852*l.*), on their contract schedule of prices for the physically defective school.

*Middle-row School, Kensal New Town, for Sanitary and Drainage Works.*

| | | | |
|---|---|---|---|
| G. Neal | £3,018 | Burn Bros. | £2,776 |
| R. P. Beattie | 2,864 | F. Bull | 2,729 |
| G. Godson & Sons | 2,855 | Lathey Bros. | 2,700 |
| F. G. Minter | 2,801 | J. Peattie* | 2,665 |

*Victory-place School, Walworth: for Skylights, Fresh-air Inlets, etc.*

Infants' School—Altering five skylights in the hall and classrooms B, C, D, and F; forming window in the cloakroom; providing Tobin fresh-air inlets, and foul-air extract ventilators to improve the ventilation. Boys' department—Providing a ventilating skylight in classroom C, and four Tobin tube fresh-air inlets in C and D rooms:—

| | | | |
|---|---|---|---|
| E. Triggs | £290 | W. Downs | £243 |
| H. Groves | 265 | J. Marsland & Sons | 237 |
| W. V. Goad | 252 | J. C. Chalkley | 196 |
| H. Line | 249 | E. B. Tucker* | 194 |
| Maxwell Bros., Ltd. | 245 | | |

The interior work at the following schools will be executed between March 12, and April 9, and the exterior painting between March 12 and April 16:—

*Edinburgh-road: Cleaning Interior and Painting Exterior.*

| | | | |
|---|---|---|---|
| General Builders, Ltd. | £319 0 | S. Polden | £230 10 |
| G. H. Sealy | 308 0 | F. T. Chinchen & Co. | 218 15 |
| W. Hornett | 250 0 | Bristow & Eatwell. | 203 0 |
| Holloway Bros., (London), Ltd. | 236 0 | W. Hammond* | 196 10 |

†*Blundell-street: Painting Interior.*

| | | | |
|---|---|---|---|
| Thompson & Beveridge | £540 | G. S. S. Williams & Son | £444 |
| H. Wall & Co. | 459 | Stevens Bros. | 428 |
| G. Kirby | 458 | C. Dearing & Son | 399 |
| Marchant & Hirst | 446 | H. Bouneau* | 375 |

† In this case the work will be carried out between March 19 and April 16, 1904.

*White Lion-street: Painting Interior and Exterior (old and new buildings).*

| | | | |
|---|---|---|---|
| Parrot & Isom | £687 | McCormick & Sons | £456 |
| A. Porter | 601 | W. Chappell | 365 |
| M. Pearson | 570 | F. W. Harris* | 360 |

*High-street: Painting Interior.*

| | | | |
|---|---|---|---|
| Vigor & Co. | £400 | W. J. Howie | £340 |
| W. Banks | 398 | H. Groves | 305 |
| P. S. Howard | 349 | W. Hayter & Son* | 280 |
| R. Woollaston & Co. | 345 | | |

*Invicta-road: Painting Interior and Exterior.*

| | | | |
|---|---|---|---|
| Vigor & Co. | £448 0 0 | W. Banks | £374 12 6 |
| W. J. Howie | 414 0 0 | H. Groves | 345 0 0 |
| C. G. Jones | 391 11 0 | W. Hayter & Son* | 312 0 0 |
| R. Woollaston & Co. | 383 0 0 | | |

*Fynehead-street: Painting Interior.*

| | | | |
|---|---|---|---|
| A. J. Acworth | £260 0 0 | W. Banks | £219 17 6 |
| W. V. Goad | 227 0 0 | T. D. Leng | 215 0 0 |
| E. P. Bulled & Co. | 224 0 0 | H. Groves | 198 0 0 |

*Rathfern-road: Cleaning Interior (Old Portion) and Painting Interior (enlargement).*

| | | | |
|---|---|---|---|
| W. J. Howie | £253 0 0 | W. Hayter & Son | £190 0 0 |
| H. Leney & Son | 228 0 0 | W. Banks | 184 17 6 |
| G. Kemp | 218 0 0 | C. G. Jones* | 177 12 0 |
| H. Groves | 197 15 0 | | |

*Teesdale-street: Cleaning Interior.*

| | | | |
|---|---|---|---|
| A. E. Symes | £285 0 0 | C. Willmott & Son | £208 0 0 |
| W. Martin | 241 0 0 | Barrett & Power* | 205 0 |
| W. Silk & Son | 229 16 0 | | |
| H. Bouneau | 215 10 0 | | |

*Wolverley-street: Painting Interior and Exterior.*

| | | | |
|---|---|---|---|
| H. Runham Brown | £593 0 | Woollaston Bros. | £482 0 |
| C. Willmott & Son | 562 0 | A. J. Sheffield | 469 0 |
| J. F. Holliday | 534 0 | Barrett & Power | 459 0 |
| G. Barker | 493 0 | W. Silk & Son | 441 0 |
| Vigor & Co. | 491 0 | J. Haydon & Sons | 402 8 |

*Leo-street: Painting Interiors (all Buildings on Site) and Exteriors (all Centres).*

| | | | |
|---|---|---|---|
| Lathey Bros. | £579 0 | Maxwell Bros., Ltd. | £479 0 |
| Bargman, Son, & Co. | 548 0 | W. Hooper | 459 10 |
| Macey & Sons, Ltd. | 535 0 | W. Sayer & Son | 409 0 |
| G. Kemp | 507 0 | W. J. Howie | 400 0 |
| | | E. Triggs* | 384 0 |

*"Latchmere:" Painting Interior (Boys, Girls, and Infants).*

| | | | |
|---|---|---|---|
| F. G. Minter | £493 0 | E. Flood | £430 0 |
| R. A. Jewell | 437 0 | R. E. Williams & Sons | 380 0 |
| C. Gurling | 468 10 | J. Garrett & Son | 376 0 |
| Rice & Son | 453 0 | R. S. Ronald | 370 0 |
| W. Johnson & Co., Ltd. | 443 10 | J. & M. Patrick* | 340 0 |

*New-road: Painting Interior.*

| | | | |
|---|---|---|---|
| W. King & Son | £534 0 | Maxwell Bros., Ltd. | £459 0 |
| J. R. Sims | 480 0 | Lathey Bros. | 423 0 |
| Edwards & Medway | 478 0 | R. S. Ronald | 410 0 |
| C. Gurling | 475 10 | E. B. Tucker | 394 0 |
| Rice & Son | 462 0 | E. Triggs* | 362 0 |

*Rosendale-road: Painting Interior and Exterior.*

| | | | |
|---|---|---|---|
| Lathey Bros. | £296 0 | Maxwell Bros., Ltd. | £269 0 |
| W. J. Coleman & Co. | 280 0 | H. Leney & Son | 266 0 |
| Holliday & Greenwood, Ltd. | 277 0 | W. J. Mitchell & Son | 249 10 |
| W. Read | 277 0 | H. J. Williams* | 226 0 |

*Bromley Hall-road (Iron Buildings): Painting Exterior of Three Buildings.*

| | | | |
|---|---|---|---|
| Parrott & Isom | £320 | Woollaston & Co | £72 |
| G. Barker | 125 | A. J. Sheffield* | 62 |
| Vigor & Co. | 89 | | |

*Running Contracts for the Supply of Various Articles of Furniture..*

| | Map and Diagram Tables. Each. | Platforms. 4 ft. 6 in. by 6 ft. per section. | Platforms. 6 ft. by 6 ft. per section. | Steps. Each. |
|---|---|---|---|---|
| | £ s. d. | £ s. d. | £ s. d. | £ s. d. |
| R. Bouneau | 6 12 6 | *2 6 0 | *2 16 0 | *0 8 0 |
| T. Cruwys | 7 10 0 | — | — | — |
| A. Duncan | 5 15 0 | — | — | — |
| Goodall, Lamb, & Heighway, Ltd. | — | 5 5 0 | 5 12 6 | 0 12 6 |
| R. Goodman & Sons | *2 15 0 | — | — | — |
| G. M. Hammer & Co., Ltd. | 6 14 0 | — | — | — |
| London School Furniture Company | 6 5 0 | 2 15 0 | 3 0 0 | 0 5 0 |
| North of England School Furnishing Company, Ltd. | — | 4 0 8 | 3 11 5 | 0 6 2 |
| R. Spencer & Co. | — | 3 6 0 | 3 12 0 | 0 7 0 |
| T. Wallis & Co., Ltd. | — | — | — | — |
| W. J. Waring & Sons, Ltd. | 6 19 6 | 4 8 0 | 5 1 9 | 0 9 6 |
| *Previous prices* | 8 5 0 | 11 4 0 | 10 4 0 | 0 9 0 |
| | 5 7 6 | each platform of 4 sections | each platform of 4 sections | 0 5 0 |

*The Supply of Linen Boxes.*

| | | |
|---|---|---|
| General Builders, Ltd., North of England School Furnishing Co., Ltd. | each | £4 12 9 |
| W. Brake & Co., | " | 3 5 4 |
| T. Cruwys | " | 2 10 0 |
| S. J. Waring & Sons, Ltd., | " | 2 5 0 |
| T. Wallis & Co., Ltd., | " | 1 18 6 |
| G. M. Hammer & Co., Ltd., | " | 1 17 3 |
| R. Goodman & Sons, | " | 1 12 0 |
| London School Furniture Co., | " | 1 10 0 |
| W. Martin,* | " | 1 9 6 |
| | " | 1 8 3 |

[Present price, £1. 9s. each. Existing contract expired on Feb. 27, 1904.]

LANGHO (Lancashire).—For the erection of epileptic homes, etc., at Langho, near Blackburn, first portion of scheme to accommodate 240 patients, for the Chorlton and Manchester Joint Asylum Committee. Messrs. Giles, Gough, & Trollope, architects, 28, Craven-street, Charing Cross, London:—

| | |
|---|---|
| Fattinson & Sons | £83,499 0 0 |
| A. White & Sons | 83,030 16 9 |
| W. Thornton & Sons | 76,725 0 0 |
| Armitage & Hodgson | 75,633 0 0 |
| E. Vickers, Ltd. | 75,000 10 6 |
| Shillitoe & Son | 73,100 0 0 |
| H. Vickers & Son | 72,700 0 0 |
| W. J. Bloxham | 72,250 0 0 |
| W. Storr, Sons, & Co., Ltd. | 71,899 0 0 |
| Gerrard & Sons | 71,800 0 0 |
| T. Rowbotham | 71,000 0 0 |
| Willcock & Co. | 70,500 0 0 |
| W. Thorpe | 70,413 0 0 |
| Whitaker & Sons | 69,882 0 0 |
| John Boland | 69,600 0 0 |
| John Knowles | 69,500 0 0 |
| John Tinline | 68,995 0 0 |
| S. & J. Smethurst | 68,630 0 0 |
| James Hatch & Son | 67,385 0 0 |
| Moss & Sons, Ltd. | 66,639 0 0 |
| Brown & Son | 66,000 0 0 |
| R. Neil & Son, Manchester* | 63,950 0 0 |

NEW MALDEN.—For erecting cottage homes, for the Kingston Union Guardians. Mr. W. H. Hope, architect, Seymour-road, Hampton Wick:—

| | | | |
|---|---|---|---|
| J. Scofield | £9,167 7 6 | C. W. Horton | £7,051 0 0 |
| Mark G. King | 8,386 10 5 | Johnson & Co. | 6,988 0 0 |
| West & Richards | 7,990 0 0 | J. Appleby & Son | 6,975 0 0 |
| Perry & Co. | 7,890 0 0 | H. Somerford & Son | 6,964 0 0 |
| Potter Bros. | 7,890 0 0 | W. A. Smyrk | 6,954 16 3 |
| S. E. Moss & Co. | 7,683 0 0 | G. Kemp | 6,949 0 0 |
| Speechly & Smith | 7,650 0 0 | H. Collings & Son | 6,907 0 0 |
| Goddard & Sons | 7,610 14 0 | McDonald Bros. | 6,906 13 6 |
| C. E. Sims | 7,595 0 0 | J. Ferguson & Co. | 6,882 0 0 |
| Mussellwhite & Sapp | 7,539 0 0 | W. Smith & Sons | 6,784 0 0 |
| G. Gray | 7,430 0 0 | F. Hawkey | 6,629 12 0 |
| W. J. Renshaw | 7,393 0 0 | J. Barker & Co. | 6,626 0 0 |
| Waller & Co. | 7,350 0 0 | E. Fitt McCarthy | 6,593 0 0 |
| J. Longley | 7,345 0 0 | A. F. Mitchell | 6,484 3 3 |
| B. H. Davey | 7,287 0 0 | J. Burges & Sons | 6,439 0 0 |
| Robson & Moon | 7,285 0 0 | Mallett & Wood, Cardiff-grove, Luton, Eeds* | 6,304 11 0 |
| C. Oldridge & Sons | 7,268 0 0 | B. E. Nightingale† | 5,757 0 0 |
| Jones Bros. | 7,211 18 4 | | |
| Cropley Bros., Ltd. | 7,198 0 0 | | |
| J. Hebblethwaite | 7,070 0 0 | | |

† Withdrawn.

NEW MALDEN.—For the erection of public offices, fire station, etc., for the Urban District Council of Maldens and Coombe. Mr. Wm. Hope, architect, Seymour-road, Hampton Wick:—

| | | | |
|---|---|---|---|
| G. F. Havell | £6,830 8 9 | B. E. Nightingale | £5,647 0 0 |
| D. W. Barker | 6,657 0 0 | F. G. Minter | 5,576 0 0 |
| McDonald Bros. | 6,566 3 9 | Lane & Son | 5,561 10 0 |
| Cropley Bros., Ltd. | 6,089 0 0 | A. W. Robins | 5,490 0 0 |
| Foster Bros. | 6,031 0 0 | Oldridge & Sons | 5,490 0 0 |
| Buckingham & Son | 5,980 0 0 | Gaze & Sons | 5,427 0 0 |
| General Builders, Ltd. | 5,890 0 0 | McCarthy E. Fitt | 5,257 0 0 |
| J. G. Kimberley | 5,836 7 0 | Ferguson & Co. | 5,167 0 0 |
| Higgs & Owthwaite | 5,754 0 0 | Goddard & Sons, Dorking, Surrey* | 5,000 0 0 |

PONTYPOOL (Mon.).—For heating apparatus, Congregational Church. Messrs. Swash & Bain, architects, Midland Bank-chambers, Newport, Mon.:—

| | | | |
|---|---|---|---|
| T. Waller & Co. | £300 0 0 | J. Howarth & Co. | 145 15 6 |
| Werner, Pfleiderer, & Perkins | 211 0 0 | Tomlinson & Milan | 145 0 0 |
| Coalbrookdale Co., Ltd. | 207 0 0 | Paragon Heating Co. | 142 0 0 |
| J. Attwood | 200 0 0 | C. Seward & Co. | 124 0 0 |
| J. Jones & Son | 169 15 0 | R. Alger & Sons, Dock-street, Newport, Mon.‡ | 122 0 0 |
| J. Grundy | 167 0 0 | Brearley, Horrox, & Co. | 115 16 0 |
| J. Williams & Sons | 150 0 0 | H. Ashworth | 115 10 0 |
| H. Hope & Sons, Ltd. | 149 10 0 | J. King, Ltd. | 97 0 0 |
| W. A. Baker & Co., Ltd. | 146 0 0 | J. Jackson & Co. | 92 0 0 |

‡ Low pressure system.

REDHILL.—For gate lodge at Redstone Hall, for Sir Myles Fenton. Mr. A. Waring Venner, architect, Redhill:—

| | | | |
|---|---|---|---|
| R. Wallace & Sons | £419 | W. Wickman, Reigate* | £348 |
| A. B. Apted | 389 | | |
| Saunders Geal | 384 | | |

TENDERS—*Continued on page 327*

# COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

*(For some Contracts, &c., still open, but not included in this List, see previous issues.)*

## COMPETITIONS.

| Nature of Work. | By whom Required. | Premiums | Designs to be Delivered |
|---|---|---|---|
| Thirty Labourers' Cottages | Lurgan R.D.C. | ..... | April 6 |
| Infirmary for 70 Beds at Workhouse, Newall, Otley | Wharfedale Guardians | 25*l.*, 15*l.*, 10*l.* | May 2 |
| *Public Library | Borough of Stamford | 25*l.*, 15*l.*, and 10*l.* | May 31 |

## CONTRACTS.

| Nature of Work or Materials. | By whom Advertised. | Forms of Tender, &c., supplied by | Tenders to be Delivered |
|---|---|---|---|
| Materials | Yardley R.D.C. | A. W. Smith, Engineer, Council House, Sparkhill, Birmingham | Mar. 19 |
| Maintenance of Fire Alarm Installation | do. | do. | do. |
| Baths, Peel Park, Bradford | Bradford Corporation | F. E. P. Edwards, Cit. Arch., Whitaker-bdgs., Brewery-st., Bradford | Mar. 21 |
| Roadwork, Oakdale-road | Wallasey U.D.C. | W. H. Travers, District Engineer, Public Offices, Egremont, Ches. | do. |
| Street Works | Manchester Corporation | Paving, etc., Dept. (Surveyor's Office), Town Hall, Manchester | do. |
| Road Materials | do. | Chief Clerk, Highways Department, Town Hall, Manchester | do. |
| Making up and Completing various Roads | Plymouth Corporation | J. Paton, Borough Engineer, Municipal Offices, Plymouth | do. |
| Repairs at Cemetery | Banbury Town Council | N. H. Dawson, Borough Surveyor, Town Hall, Banbury | do. |
| Parochial House at Terryglass | Rev. J. Darcy | Byrne & Son, Architects, 20, Suffolk-street, Dublin | do. |
| Villa, near Menai Bridge | ..... | H. Thomas, Architect, Castle-buildings, Carnarvon | do. |
| Granite and Slag | Towcester R.D.C. | W. Sheppard, Surveyor, Towcester | Mar. 22 |
| Materials | Burslem Corporation | F. Bettany, Borough Surveyor, Municipal Offices, Burslem | do. |
| Farmhouse, Woodleigh | Mr. E. B. Luscombe | Mr. Barrons, Weir View, Totnes | do. |
| Sewer Entries and Jobbing Works, etc. | Deptford Borough Council | V. Orchand, Town Clerk, Municip. Off., 20, Tanner's-hill, Deptford | do. |
| Making up Cambus-road and Carson-road | West Ham Borough Council | J. G. Morley, Borough Engineer, Town Hall, West Ham | do. |
| Broken Limestone | Caerphilly U.D.C. | A. O. Harpur, Surveyor, Caerphilly | do. |
| Repair, etc., of Highways | Sevenoaks R.D.C. | W. H. Bolt, Surveyor, Leigh, Tonbridge | do. |
| Two Villas at Llantwit Vardre | Mr. C. Griffiths | A. Bryant, Architect, Midland Bank Buildings, Pontypridd | do. |
| *Roadmaking and Paving Works | Willesden District Council | Council's Engineer, Dyne-road, Kilburn, N.W. | do. |
| Road and Sewers, Horfield | ..... | W. P. Saunders, Architect, Rupert-chambers, Quay-street, Bristol | do. |
| Four Houses, Ermington, Devon | Mr. J. Treneman | W. Harvey, Puttapool, Cornwood, Devon | do. |
| Materials | Oldham Corporation | E. C. Foote, Borough Surveyor, Town Hall, Oldham | Mar. 23 |
| Whinstone and Slag | Easingwold R.D.C. | F. J. H. Robinson, Clerk, Easingwold | do. |
| Stores and Materials | Rotherham Corporation | Tramways Manager, Tram Depot, Rotherham | do. |
| Conversion of Premises in Wade-st. to a Public House | ..... | Jackson & Fox, Architects, 7, Rawson-street, Halifax | do. |
| Stones and Chalk | Cosford R.D.C. | E. W. Veale, Surveyor, Bildeston, Suffolk | do. |
| Alterations, etc., Hospital Boiler House at Workhouse | Stoke-upon-Trent Guardians | A. P. Miller, Architect, Hanley | do. |
| Emergency Staircases & Balconies at Workho. Hosp. | do. | do. | do. |
| Cement | ..... | J. S. Pickering, Borough Surveyor, Municipal Offices, Cheltenham | do. |
| Baptist Chapel, St. Thomas, Swansea | ..... | W. Beddoe Rees, A.R.I.B.A., 37, St. Mary-street, Cardiff | do. |
| Lime | Rochdale Gas, etc. Committee | J. Leach, Town Clerk, Town Hall, Rochdale | do. |
| Tubes and Fittings | do. | T. Banbury Ball, at Gasworks, Dane-street, Rochdale | do. |
| Main Pipes and Specials | do. | do. | do. |
| *New Infirmary, etc., at Workhouse | Chipping Norton Union | C. Smith & Sons, 164, Friar-street, Reading | do. |
| *Wood-Paving, etc., Netherwood-rd. & Richmond-rd. | Borough of Hammersmith | Borough Surveyor, Town Hall, Broadway, Hammersmith, W. | do. |
| Extention of Engine & Boiler Houses at Elec. Wks. | Southend-on-Sea Corporation | E. J. Elford, Borough Engineer, Southend-on-Sea | Mar. 24 |
| Granite and Road Material | Luton Town Council | Borough Surveyor, Town Hall, Luton | do. |
| Lavatory and Urinal at Cattle Market, Cross-lane | Salford Corporation | Borough Engineer's Office, Town Hall, Salford | do. |
| Lime, Pipes, and other Stores | Carlisle Gas Committee | W. J. Smith, Engineer, Gas Works, Carlisle | do. |
| Road Macadam | Rhondda U.D.C. | W. J. Jones, Engineer, Public Offices, Pentre, Rhondda | do. |
| Broken Granite, Edging, etc., and Cement | Peterborough City Council | J. W. Walshaw, City Surveyor, Guildhall, Peterborough | do. |
| Broken Granite and Slag | Kesteven County Council | W. B. Purser, County Surveyor, 4, St. Peter's Hill, Grantham | do. |
| Small Villa Residence at Sandsend, Whitby | Dr. Tinley | E. H. Smales, A.R.I.B.A., 5, Flowergate, Whitby | do. |
| Public Conveniences under the Shambles | Burslem Corporation | Borough Surveyor's Office, Queen-street, Burslem | Mar. 25 |
| Road Material and Carting | Guildford R.D.C. | J. Anstee, C.E., Council's Offices, Commercial-road, Guildford | do. |
| Temporary Schools, Mauldeth-road, Ladybarn | Withington U.D.C. | E. Woodhouse, Architect, 88, Mosley-street, Manchester | do. |
| Residence at Tuam | Rev. Dr. Healey, Arch. of Tuam | D. N. Morris, 68, Harcourt-street, Dublin | do. |
| One 500 Kilowatt Steam Generator | Stockport Gas and Electricity Com. | A. J. H. Carter, Electricity Works, Stockport | do. |
| Electric Lighting at Cardepot | Swindon Corporation | Lacy & Sillar, Engineers, 78, King-street, Manchester | do. |
| Machine Tools, etc., for Cardepot and Repair Shops. | do. | do. | do. |
| Warehouse at Union Mills, Halifax | ..... | R. Horsfall & Son, Architects, 22a, Commercial-street, Halifax | do. |
| Stores on Pothouse Wharf, Carmarthen | Western Counties Agric. Co-op. Soc. | The Association's Stores, Pothouse-quay, Carmarthen | do. |
| Saleshop & Premises, Church-st. & Orchard-st., Shef. | Mr. C. L. Grundy | Gibbs & Flockton, Architects, 15, St. James's-row, Sheffield | do. |
| Presbytery at Loughglynn, co. Roscommon | ..... | Canon White, Loughglynn | do. |
| *New Coastguard Buildings, near Plymouth | Admiralty | Director of Works Department, 21, Northumberland-avenue, W.C. | do. |
| Road Material and Cartage | Repton R.D.C. | T. R. Sidgwick, Surveyor, Repton, Burton-on-Trent | Mar. 26 |
| Dwelling Houses & Shops, Bloomfield-sq., Aberlow | J. Campbell | Mr. J. Jamieson, Architect, 51, High-street, Elgin | do. |
| Alterations, etc., Romsey Police Station | Southampton County Council | W. J. Taylor, County Surveyor, The Castle, Winchester | do. |
| Widening of Bridges | Northumberland County Council | J. A. Bean, County Surveyor, The Moot Hall, Newcastle-on-Tyne | do. |
| Street Works | Hadleigh U.D.C. | T. F. Corder, Surveyor, 115, High-street, Hadleigh | do. |
| Road Material | Wrotham U.D.C. | A. J. H. Powell, Surveyor, Borough-green, Sevenoaks | do. |
| Detached Villa at Omagh, co. Tyrone | ..... | T. Houston, Architect, Kingscourt, Wellington-place, Belfast | do. |
| Station Buildings & Agent's House, Boat of Garten | Highland Railway Co. | W. Roberts, Engineer, Inverness | do. |
| Footpaths | Helensburgh Town Council | J. R. Wilson, Burgh Surveyor, Helensburgh, N.B. | do. |
| Exten. of Purifying H'se at Gasworks, Blackstoun-rd. | Paisley Gas Corporation | G. R. Hislop, Engineer, Paisley Gas Works | do. |
| Workmen's Lavatory and Stores | do. | do. | do. |
| Street Works, Sludge-lane, Wakefield | The Council | City Surveyor, Town Hall, Wakefield | do. |
| „500 Yds. of c.i. Watermains, etc., Broxb'ne & Wormley | Ware R.D.C. | Bailey Denton, Lawford & Symons, Eng., 9, Bridge-st., W'm'ster | Mar. 28 |
| Covered Service Reservoir | do. | do. | do. |
| Pumping Station, etc. | do. | do. | do. |
| Extensions to Goods-shed, Donegall Quay | Belfast Harbour Commissioners | G. F. L. Giles, Harbour Engineer, Belfast | do. |
| Materials | Clayton Le Moors U.D.C. | A. Dodgeon, Surveyor to Council, Clayton le Moors | do. |
| Paving, Sewering, etc., Sandy-lane, Dukinfield | Dukinfield Corporation | S. Hague, Borough Surveyor, Town Hall, Dukinfield | do. |
| School, Devonshire-street, Higher Broughton | Salford Education Committee | H. E. Stelfox, F.R.I.B.A., 6, Princess-street, Manchester | do. |
| Materials | Gateshead Corporation | J. Bower, C.E., Borough Engineer, Town Hall, Gateshead | do. |
| Annual Contracts | West Molesey U.D.C. | Surveyor, District Council Offices, East Molesey | do. |
| *New School in Devonshire-street, Higher Broughton | County Borough of Salford | H. E. Stelfox, F.R.I.B.A., 6, Princess-street, Manchester | do. |
| Annual Contracts | Sowerby Bridge U.D.C. | Engineer, Town's Buildings, Sowerby Bridge | do. |
| Alterations, etc., Welsh Cong'l. Chapel, Taff's Well | ..... | G. L. Watkins, Architect, Station-terrace, Caerphilly | do. |
| Furnishing Isolation Hospital and Buildings, Tonteg | Pontypridd U.D.C. | P. R. A. Willoughby, Surveyor, Pontypridd | do. |
| Cloakroom, etc., at Gordon-road Council Schools | Stroud Education Committee | W. Banks, A.M.Inst.C.E., Guildhall, Rochester | do. |
| *Precipitating Tanks, etc., at Irrigation Land | Barnet U.D.C. | Council's Surveyor, 40, High-street, Barnet | Mar. 29 |
| Roofing at Wapping Goods Yard, Liverpool | Lancashire & Yorkshire Ry. Co. | Engineer's Office, Hunt's Bank, Manchester | do. |
| Painting, etc., Hos., Whitmoor Common, Worplesdon | Guildford, etc., Hospital Board | A. J. Sturgess, Architect, 25, High-street, Guildford | do. |
| Road Material | Malling R.D.C. | J. Marshall, Surveyor, West Malling | do. |
| 1,400 Yds. of Quartzite, Basalt, or Granite | do. | do. | do. |
| Furniture and Fittings, York-road Branch Library | Leeds Corporation | H. A. Chapman, A.R.I.B.A., Prudential-bldgs., Park-row, Leeds | do. |

**CONTRACTS.**—*Continued.*

| Nature of Work or Materials. | By whom Advertised. | Forms of Tender, &c., supplied by | Tenders to be Delivered |
|---|---|---|---|
| Street Works | Stanley U.D.C. | J. Routledge, Surveyor, Council Offices, Stanley | Mar. 29 |
| Excavating and Refilling Trenches for Gas Mains | Glasgow Corporation | Mr. Wilson, Engr. of the Gas Department, 45, John-st., Glasgow | do. |
| *Extension of Telegraph Factory, Holloway | H.M. Works | H.M. Office of Works, Storey's-gate, S.W. | do. |
| *Three Cottages at Knowle Asylum, Fareham | Co. of S'th'mpt'n Asylum Vis. Com. | County Surveyor, The Castle, Winchester | do. |
| *New Coastguard Detachment, near Pembroke | Admiralty | Director of Works Dept., 21, Northumberland-avenue, W.C. | do. |
| Road Materials | Rushden U.D.C. | W. B. Madin, Engineer, Vestry Hall, Rushden, Northampton | do. |
| Leadwork for Provan Chemical Works | Glasgow Corporation Gas Depart. | A. Wilson, Engineer, 45, John-street, Glasgow | do. |
| Benzol and Carbolic Plant for Provan Chemical Wks | do. | do. | do. |
| Two-Track Plate Girder Bridge | East India Railway Company | C. W. Young, Secretary, Nicholas-lane, London, E.C. | Mar. 30 |
| *Making-up Passage at Rear of Uxbridge-road | Borough of Ealing | Borough Engineer, Town Hall, Ealing, W. | do. |
| *Three Temporary Schools | K'gs Norton, etc., U.D.C. Edu. Com. | Sur. to the Council, 23, Valentine-rd., King's-heath, nr. B'm'ham | do. |
| *Erection of Wall at Prince's-road Workhouse | Lambeth Guardians | Clerk's Office, Brook-street, Kennington-road, S.E. | do. |
| 2,000 Gallon Water-Softening Plant | Swindon Corporation | J. G. Griffin, Electricity Works, Swindon | Mar. 31 |
| Llysfaen Sewerage and Water Works | Conway R.D.C. | T. B. Farrington, A.M.Inst.C.E., Trinity-square, Llandudno | do. |
| Rossett Police House | Denbighshire County Council | R. Lloyd Williams, County Surveyor, Denbigh | do. |
| Presbyterian Church, Whitehead | Building Committee | J. J. Phillips & Son, Architects, 61, Royal-avenue, Belfast | do. |
| Stores (Granite, etc.) | Smethwick Corporation | C. J. Fox Allin, Borough Surveyor, Town Hall, Smethwick | do. |
| Rubble Concrete Quay Wall, Anstruther | Union Harbour Commissioners | Engineer's Office, 5, High-street, Burntisland | do. |
| Malt. at K'kando-Glenl't Dis., Dalbeallie, Strathspey | | C. C. Doig, Architect, Elgin | do. |
| Retort House, Floor, etc., Liverpool-street Works | Salford Gas Committee | W. W. Woodward, Engineer, Gas Offices, Bloom-street, Salford | do. |
| *Disinfector-fit Drying Rms, etc., St. John's-rd., W'h'se | St. Mary, Islington, Guardians | Master of the Workhouse, St. John's-road, Upper Holloway | do. |
| Repair of Highways, Bicester | Bicester U.D.C. | H. J. Gibbons, Launton-road, Bicester | do. |
| Repairs to Bridge at Waterford | Hertford R.D.C. | J. W. Riggs, Surveyor, St. Elmo, Fanshawe-st., Bengeo Hertford | April 1 |
| Wesleyan Church and Church Parlour, Urmston | | J. Jameson Green, Architect, 19, South John-street, Liverpool | April 2 |
| Club Premises, Ewart-street, Great Horton | Working Men's Club | S. Spencer, Architect, Old Bank-chambers, Gt. Horton, Bradford | do. |
| 5,661 Yds. run of 9-in. & 12-in. Stoneware Pipe Sewer | Sutton-in-Ashfield U.D.C. | Messrs. Beesley, Son, & Nichols, Eng., 11, Victoria-st., W'minster | April 4 |
| 316 Yards of Brick Storm-water Drains | do. | do. | do. |
| 684 Yards of Stoneware Storm-water Drains | do. | do. | do. |
| Setts, Curbs, Flags, etc. | Middleton Corporation | W. Welburn, Borough Surveyor, Middleton | do. |
| Granite Setts | Shipley U.D.C. | W. H. Dawson, Surveyor, Shipley, Yorks | do. |
| Street Works | Sunderland Corporation | Borough Surveyor's Office, Town Hall, Sunderland | April 5 |
| Raising Road, Chiddingstone Mill | Sevenoaks R.D.C. | W. H. Bolt, Surveyor, Leigh, Tonbridge | do. |
| Heating and Ventilating Maryhill District Library | Glasgow Corporation | A. Davie & M'Kim, Measurers, 219, St. Vincent-street, Glasgow | do. |
| Disposal of Sewage (Contract 4) | Worcester Corporation | T. Caink, City Engineer, Guildhall, Worcester | do. |
| Twenty-six Houses on Gorse Hill Estate, Stretford | Co-operative Society | Secretary's Office, Downing-street, Ardwick, Manchester | do. |
| Six H'ses at Provident-av., Barlow-rd., Levenshulme | do. | do. | do. |
| *Making-up Roads | Beckenham U.D.C. | Council's Surveyor, Beckenham | do. |
| *Road-Making, etc., at Grays, Essex | Kent & Essex Ho., L'nd, etc., Inv.Co. | G. W. Cobham, 1, Edwin-street, Gravesend | April 6 |
| Sewerage Works (Pumping Station, Contract No. 4) | Derby Corporation | J. Mansergh & Sons, Engineers, 5, Victoria-street, Westminster | April 7 |
| *Electricity Generating Station | Stepney Borough Council | Borough Engineer, 15, Great Alie-street, Whitechapel, E. | do. |
| New Church and Schools, Old Shoreham-road, Hove | | E. J. Hamilton, 2, New-road, Brighton | do. |
| *Extension of Electric Generating Stn., Walthamstow | Walthamstow U.D.C. | Council's Engineer, Town Hall, Walthamstow | April 8 |
| Balleety Bridge over the Colligan | Waterford County Council | County Surveyor, Waterford | April 11 |
| Bartlhaels Bridge over the Nier | do. | do. | do. |
| Covered Reservoir in Crow Holes Wood, Cliviger | Burnley R.D.C. | S. Edmondson, Surveyor, 18, Nicholas-street, Burnley | do. |
| Socket and Spigot Pipes | do. | do. | do. |
| Road Metalling | Magor R.D.C. | I. Thomas, Clerk, Union Offices, Queen's Hill, Newport, Mon. | do. |
| *Painting & Cleaning Leavesden Asylum, Watford, etc. | M.A.B. | Office of the Board Embankment, E.C. | April 12 |
| *Painting & Cleaning North-Eastern Hos., S. Tott'ham | do. | do. | do. |
| *Painting & Cleaning Eastern Hos., Homerton, N.E. | do. | do. | do. |
| *Alt. to Laundry-bldgs., East'n Hos., Homerton, N.E. | do. | do. | do. |
| *Alter'ns. to Eng. Arrangem'ts, East'n Hos., Homerton | do. | do. | do. |
| *Building Materials, Dartm'r, P'kh'st, P'tland Prisons | Direc. Con. Prisons, H.O., Whitehall | Prison Department, Home Office, Whitehall, S.W. | do. |
| Extension, etc., Newry Fever Hospital | Down County Council | R. MacIlwaine, Secretary to Council, Court House, Downpatrick | April 15 |
| *Electricity Station Buildings | Loughborough Corporation | A. E. King, Architect, Baxter-gate, Loughborough | April 16 |
| Pumping Machinery at Graving Dock | Belfast Harbour Commissioners | G. F. L. Giles, Harbour Engineer, Belfast | April 18 |
| *Electricity Generating Station, Greenwich | L.C.C. | Arch. Dept., Highways Section, Trafalgar House, 13, Char.-cross. | April 26 |
| 140,000 Bricks, delivered at Guildford Station | | F. G. Minter, High-street, Putney, S.W. | No date. |
| Slag, Limestone, and Granite | Wortley Rural Highway District | F. Crawshaw, Surveyor, Loxley | do. |
| Five Houses in Allen-road | | G. Westcott, Architect, 11, King-street West, Manchester | do. |
| Painting Eleven Houses, Mill-street, Ancoats | | H. Sheldon, Architect, Middlewich | do. |
| Materials | Streets Committee, Bolton | E. L. Morgan, Borough Engineer, Town Hall, Bolton | do. |
| Four Houses at Tingley | | G. Sharp, Old White Bear, Tingley | do. |
| Monkhill Wesleyan Chapel and Schools | | H. Higginson, Architect, 3, Londsale-street, Carlisle | do. |
| Country House, St. James's Park Estate, Harrogate | | H. & E. Martin, Architects, Cheapside-chambers, Bradford | do. |
| Rd.-Making & Sewer. Wks., Bruce-grove, Tottenham | Gov. & Com. Inc. Soc. Licen. Vict's. | George Treacher, 73, Moorgate-street, E.C. | do. |
| Demolition and Removal of Old Buildings, Tottenham | do. | do. | do. |
| Pump, Half-a-Mile of Pipe, Cattle Troughs, etc. | | T. B. Mason, Beenleigh, Harbertonbord, Devon | do. |
| Vivian Hotel, Aberavon | Truman, Hanbury, Bux'. & Co., U.V. | J. P. Jones & Rowlands, Architects, 3, Goat-street, Swansea | do. |
| Winter Garden, Beamish Hall, Stanley | Mr. S. D. Eden | T. E. Crossling, Architect, Stanley, Co. Durham | do. |
| Three Dwelling-houses, Shield-row, Stanley | Messrs. Humble, Mann, & Gibson | do. | do. |

## PUBLIC APPOINTMENTS.

| Nature of Appointment. | By whom Advertised. | Salary. | Applications to be in |
|---|---|---|---|
| *Clerk of Works | Stafford Union | Not stated | Mar. 24 |
| *Assistant Surveyor | County Borough of Croydon | 150*l.* per annum | Mar. 26 |
| *Road Foreman | Wandsworth Borough Council | 3*l.* 10*s.* per week | Mar. 28 |
| *Architectural Draughtsman | University College of North Wales | 2*l.* 2*s.* per week | Mar. 31 |
| *Clerk of Works | Chorlton, etc., Joint Asylum Com. | 4*l.* 4*s.* per week | April 6 |
| *Assistant Examiner in Office of H.M. Works, etc. | Civil Service Commission | Not stated | April 14 |
| *Quantity Surveyor | Lambeth Borough Council | Not stated | No date. |

*Those marked with an asterisk (*) are advertised in this Number.* *Competitions*, iv. *Contracts*, iv. vi. viii. x. *Public Appointments*,

TENDERS—*Continued from page* 325.

REDHILL.—For alterations, additions, and redrainage works to Thornbank, Redhill, for Mr. Thomas Knight. Mr. A. Waring Venner, architect, Redhill :—

| | | | |
|---|---|---|---|
| King & Son | £390 | Saunders Geal, Reigate* | 325 |
| A. B. Apted | 359 | Wallace & Sons | 275 |
| | | Withdrawn. | |

REDHILL.—For residence on Redstone Park, Redhill, for Mr. H. T. Brown, Croydon. Mr. A. Waring Venner, architect, Redhill :—

| | | | |
|---|---|---|---|
| Nightingale & Sons | £1,192 | Saunders Geal | £1,010 |
| Buckland & Waters | 1,170 | G. Waycott | 998 |
| King & Son | 1,150 | R. Wallace & Son, South Merstham* | 869 |
| Bushey & Son | 1,080 | | |
| Elsey & Son | 1,076 | | |

REDHILL.—For residence on Earlswood-road, Redhill, for Mr. A. Montague Isard. Mr. A. Waring Venner, architect, Redhill :—

| | | | | | |
|---|---|---|---|---|---|
| Wm. Scott | £775 | 0 | 0 | A. B. Apted | 674 | 0 | 0 |
| R. Worrsell | 743 | 0 | 0 | S. Buckman | 649 | 0 | 0 |
| S. Geal | 725 | 0 | 0 | C. Carter, Redhill* | 640 | 0 | 0 |
| R. Wallace & Son | 719 | 0 | 0 | S. S. Pink | 639 | 10 | 0 |
| W. Wickman & Son | 687 | 0 | 0 | | | | |

RYDE (Isle of Wight).—For bungalow residence near Ryde, Isle of Wight, for Mr. Rolands Rivolta. Mr. A. Waring Venner, architect, Redhill, :—

Henry Linington, Wroxhall, Isle of Wight* £1,000

SELLY OAK.—For making new roads at the workhouse, Selly Oak, for the Guardians of King's Norton Union. Messrs. T. B. Hall & Jones, engineers, King's-court, 117, Colmore-row, Birmingham :—

Abel Cooper, Rotton Park-road, Birmingham* .. £501

SOUTHALL.—For construction of a truck shed at the sanatorium, and for additions to fire station, for the Southall-Norwood Urban District Council. Mr. R. Brown, Engineer and Surveyor, Public Offices, Southall :—

*For Truck Shed.*

| | | | |
|---|---|---|---|
| P. Bell | £99 | 0 | 0 |
| W. Booth | 95 | 1 | 6 |
| G. H. Lough | 80 | 0 | 0 |
| A. & B. Hanson, Southall* | £78 | 0 | 0 |

*For Additions, etc., to Fire Station.*

| | | | |
|---|---|---|---|
| W. Booth | £312 | 14 | 6 |
| G. H. Lough | 275 | 0 | 0 |
| A. & B. Hanson* | £267 | 0 | 0 |

[All of Southall.]

SOUTHEND-ON-SEA.—For making-up Richmond-avenue, passage at rear of Westcliff-avenue, Bournemouth Park-road, etc., for the Corporation. Mr. E. J. Elford, Borough Surveyor, Southend.

| | Chinchilla-road. | Richmond-avenue. | Bournemouth Park. | Back Passage. |
|---|---|---|---|---|
| | £ s. d. | £ s. d. | £ s. d. | £ s. d. |
| Parsons & Parsons* | 925 5 0 | 323 9 | 627 7 1 | 70 1 0 |
| R. Ballard, Ltd. | 1,132 0 0 | 384 0 0 | 672 0 0 | 103 0 0 |
| W. Iles | 935 0 0 | 340 0 0 | 655 0 0 | |
| Buxton & Jenner | 943 0 0 | 346 0 0 | 632 0 0 | 85 0 0 |
| J. Summerfield | 991 0 0 | 332 0 0 | 654 0 0 | |
| Surveyor's Estimate | 964 0 0 | 280 0 0 | 639 0 0 | 55 15 6 |

SURBITON.—For the erection of waiting, cleaning, and storerooms, and coachhouses adjoining mortuary, for the Urban District Council. Mr. Samuel Mather, Surveyor and Engineer:—

| | | | |
|---|---|---|---|
| E. Tomkinson | £440 0 0 | McDonald Bros., Surbiton* | £382 0 0 |
| Adkins Bros. | 419 12 0 | | |
| R. Atkinson | 378 0 0 | | |

THORNHILL (Yorks.).—For the erection of administrative buildings at Bunker's Hill, Whitley-road, for the Urban District Council. Mr. S. W. Parker, Surveyor to Council, Thornhill:—

| | | |
|---|---|---|
| *Mason:* | Ellis P. Sheard, Thornhill* | £318 11 0 |
| *Slater:* | W. H. Thompson, Batley* | 37 15 0 |
| *Joiner:* | J. Richardson & Sons, Dewsbury* | 139 0 0 |
| *Plasterer:* | Parkinson Bros., Heckmondwike* | 47 7 0 |
| *Plumber:* | J. Auty, Dewsbury* | 56 0 0 |
| *Painter:* | J. Warhurst, Thornhill Lees* | 4 10 0 |

TONYPANDY.—For the extension of Trinity Hall, and for new class-rooms, etc. Mr. R. S. Griffiths, architect, Excelsior-buildings, Tonypandy:—

A. Richards, Pintre and Burry* .. £2,860 0 0

WALTHAMSTOW.—For car depot. Mr. G. W. Holmes, A.M.I.C.E., Engineer:—

| | | | |
|---|---|---|---|
| W. Whitford & Co. | £9,389 | Mayoh & Haley | £8,160 |
| Foster Bros. | 9,297 | Wellerman Bros. | 8,080 |
| D. R. Paterson | 9,044 | J. Westwood & Co. | 7,575 |
| Holliday & Greenwood | 8,760 | B. E. Nightingale | 7,498 |
| Myall & Upson | 8,570 | J. A. Reed | 7,244 |
| L. Whitehead & Co., Ltd. | 8,517 | W. Lawrence & Sons | 6,997 |
| J. C. Garbett | 8,350 | W. Jones & Son | 6,991 |
| Hughes & Stirling | 8,202 | F. J. Coxhead | 6,918 |
| Francis Morton & Co. | 8,200 | Rowley Bros., 462, West Green-road, South Tottenham* | 6,610 |

WESTON-SUPER-MARE.—For the supply and fixing of 138 yds. of ornamental c.i. railing on the approach road to Knightstone, for the Urban District Council. Mr. H. Nettleton, Surveyor, Town Hall, Weston:—

| | | | |
|---|---|---|---|
| H. Dyer | £219 0 0 | Hillman & Sons | £134 16 8 |
| J. M. Williams | 190 0 0 | J. Monk | 130 10 0 |
| Haward Bros. | 179 0 0 | J. P. Curtis, Weston-super-Mare* | 129 18 10 |
| F. C. Stephen. | 140 0 0 | | |
| Leaver & Fox. | 135 0 0 | | |

WEYMOUTH.—For road works in connexion with Ilchester-road, Westham, for the Urban District Council. Mr. W. Barlow Morgan, Borough Surveyor:—

*Glyn-avenue.*

| | | | |
|---|---|---|---|
| J. T. Whettam, jun. | £480 0 | J. A. Bartlett, Rodwell Works, Weymouth* | £417 8 |
| S. J. Smith | 420 0 | | |

*Ilchester-road.*

| | |
|---|---|
| J. T. Whettam, jun. | £540 0 0 |
| G. F. Bowring | 514 10 0 |
| J. A. Bartlett | 496 15 6 |
| S. J. Smith, Alexandra-terrace, Commercial-rd., Weymouth* | 469 0 0 |

WHITEHAVEN.—For waterworks, for the Rural District Council. Mr. G. Boyd, C.E., 33, Queen-street, Whitehaven:—

*Contract No. 1.*

Staveley Coal & Iron Co., near Chesterfield* .. £796 12 6

*Contract No. 2.*

Martin L. Boundy, Braithwaite, via Keswick* 649 2 6

*Two Screening Tanks at Hensingham, near Whitehaven.*

Henry Kitchin, Corkickle, Whitehaven* .. £95

WHITEHAVEN.—For altering a building at Oak Bank into a dwelling-house, for Mr. R. Shaw. Mr. J. S. Stout, architect, 36, Lowther-street, Whitehaven:—

| | | |
|---|---|---|
| *Builder:* | T. Davidson, Parton* | £460 0 0 |
| *Joiners:* | Jackson & Son, Whitehaven* | 208 15 3 |
| *Plumber:* | W. Stratham, Whitehaven* | 100 0 0 |
| *Plasterer:* | R. Gamman, Whitehaven* | 96 0 0 |
| *Slater:* | E. Burrows, Workington* | 30 14 4 |
| *Painter:* | R. Woodnorth, Whitehaven* | 17 0 0 |

WOMBWELL.—For the erection of new chancel, organ chamber, and vestries, St. Mary's Church. Messrs. C. & C. M. Hadfield, architects, Cairn's-chambers, 19, St. James's-street, Sheffield. Quantities by Mr. Leon A. Francis, 8, John-street, Adelphi, W.C.:—

| | | | |
|---|---|---|---|
| W. Johnson & Chadwick & Co. | £2,813 8 5 | D. O'Neill & Son | £2,339 0 0 |
| W. Nicholson & Son | 2,462 10 0 | G. H. Smith Mexbro'* | 2,316 6 0 |
| | 2,348 11 3 | | |

WROXALL (Warwickshire).—For the erection and completion of a keeper's house, boiling house, kennels, and outbuildings at Wroxall, near Warwick, for Mr. J. Broughton Dugdale, J.P. Mr. Charles M. C. Armstrong, architect, 5, High-street, Warwick:—

| | | | |
|---|---|---|---|
| E. Kemp | £1,100 18 6 | C. Hope, jun. | £935 0 0 |
| R. Bowen | 996 0 0 | E. Smith & Son, Kenilworth† | 896 0 0 |
| J. H. Cashmore | 988 0 0 | | |
| E. Talliss | 979 0 0 | | |

† Provisionally accepted.


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